

## SECTION L SUBASSEMBLY REPLACEMENT

During replacement of subassemblies, follow these general precautions:

- (1) Turn off the power supply before initiating work.
- (2) Use calibrated tools when specified by the replacement procedure.
- (3) Retain all removed screws, washers, and nuts. Refer to the part numbers in the Illustrated Parts Catalog when replacing any parts.
- (4) Remove parts that fall into the equipment.
- (5) Document all trouble prior to replacement to ensure that those conditions have been corrected.

List of subassembly replacement procedures contained in Section L.

Subassembly	MAP No.
Read/write head	L0010
Erase head	L0020
Write/read amplifier PCA	L0030
Threading channels	L0040
Tape cleaner	L0050
EOT/BOT sensor	L0060
Tape guides	L0070
Roller guides	L0080
Auto cleaner	L0110
Capstan motor	L0130
Threading chute and restraint member	L0140
Cartridge opener	L0150
Error marker	L0160
File protect assembly and microswitch	L0170
Auto hub and reel boss	L0180
Machine reel	L0230
Low tape sensor	L0250

Subassembly	MAP No.
Reel motors	L0260
Vacuum column cover (glass plate)	L0270
Vacuum column cover (roller catch)	L0280
Microswitch and bracket for auto open window	L0300
Front door clutch assembly	L0310
Vacuum and pressure valve assembly	L0330
Restrictor	L0350
Fans	L0360
Cooling air filter	L0370
Absolute filter	L0380
Air supply unit and belts	L0400
Threading cover	L0410
Cartridge sensor	L0420
Capacitive sensor	L0430
Power supply unit	L0440
PCA 1A06 shorting plugs	L0480

L0010	Read/Write Head Replacement
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## I. Removal

- (1) Remove the erase head per L0020.
- (2) Remove the board connectors and the chassis ground terminal from the read/write head.
- (3) Loosen the block screw and remove the block.
- (4) Loosen the two head plate screws, and remove the read/ write head.

## II. Installation

Install the read/write head by reversing the steps for removal.

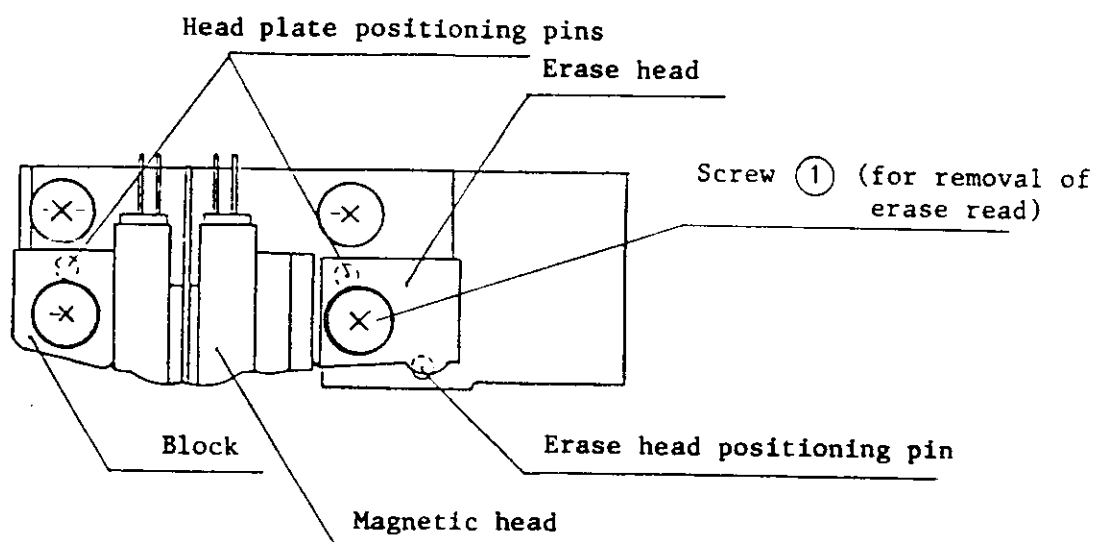


Figure L.1 Read/write head and erase head

L0020	Erase Head Replacement
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I. Removal

- (1) Remove screw (1) shown in Figure L.1. Pull the erase head out far enough to access the push-on connectors.
- (2) Remove the two connectors and remove the erase head.

II. Installation

Install the erase head by reversing the steps for removal.

L0030	Write/Read PCA Replacement
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#### I. Removal

- (1) Turn off power to the MTU.
- (2) Tag and remove all connectors at the write/read PCA. (Refer to PCA location chart.)
- (3) Pull to release the two white PCA hold-downs that secure the PCA to the PCA frame.
- (4) Remove the PCA.

#### II. Installation

Install the PCA by reversing the steps for removal.

#### III. Verify the replacement PCA by performing the following tests and adjustments:

- (1) Write voltage (see K0160).
- (2) Read signal level (see K0130, K0140).
- (3) Read and write skew (see K0150).
- (4) Perform offline diagnostic routine "00" (see Section C.2.1).

## I. Removal

- (1) Remove the thread cover per L0410.
- (2) Open the column cover and threading cover to gain access to the upper and lower threading channels shown in Figure L.2.
- (3) Remove three screws and the upper channel.
- (4) Remove two screws and the lower channel.

## II. Installation

Install the upper and lower threading channels by reversing the steps for removal.

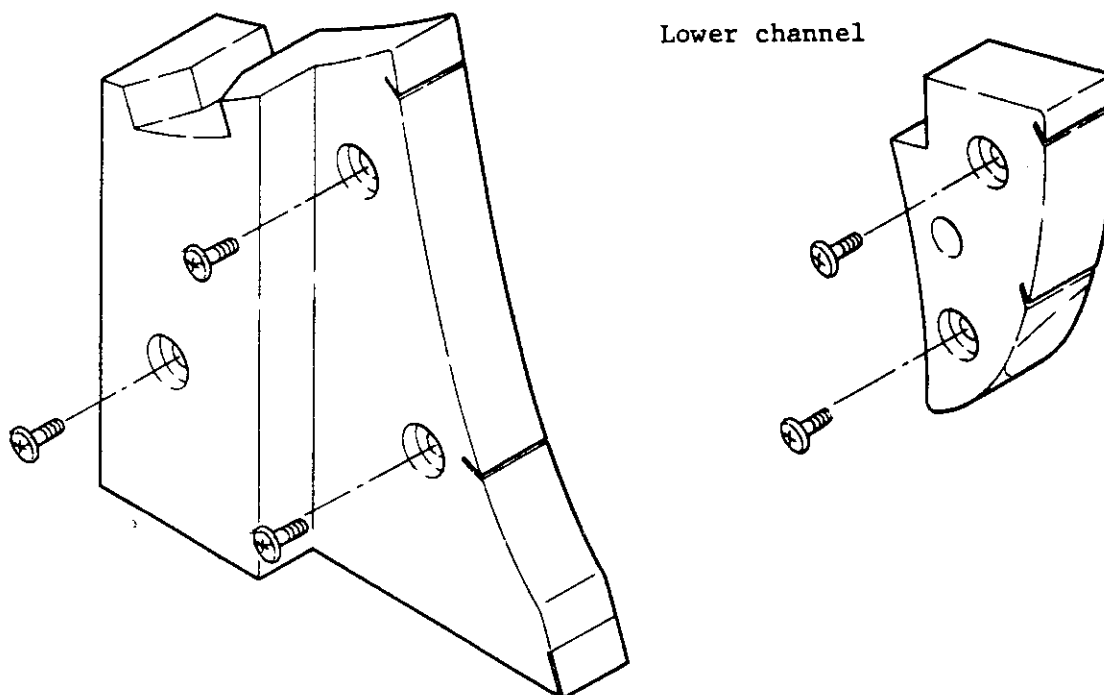


Figure L.2 Upper and lower threading channels

L0050	Tape Cleaner Replacement
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I. Removal

- (1) Remove two screws shown in Figure L.3.
- (2) Remove the tape cleaner.

II. Installation

- (1) Place the tape cleaner onto its positioning pin.
- (2) Tighten the two screws shown in Figure L.3.

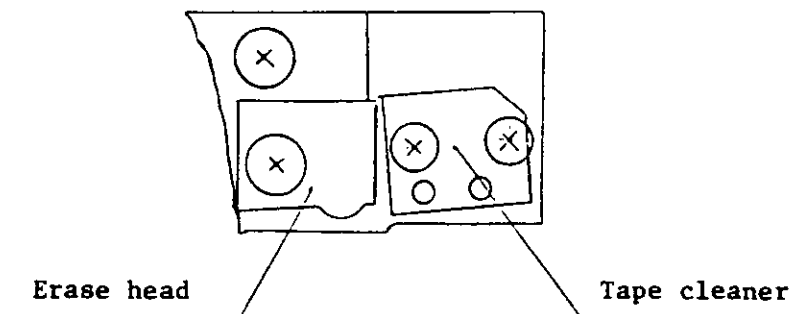


Figure L.3 Tape cleaner

### I. Removal

- (1) Remove connector (CNJ54) from the photosensor block.
- (2) Remove the two screws and remove the photosensor block.

### II. Installation

- (1) Install the photosensor block by reversing the steps for removal.
- (2) Check and adjust the BOT and EOT detection circuits (see K0210).

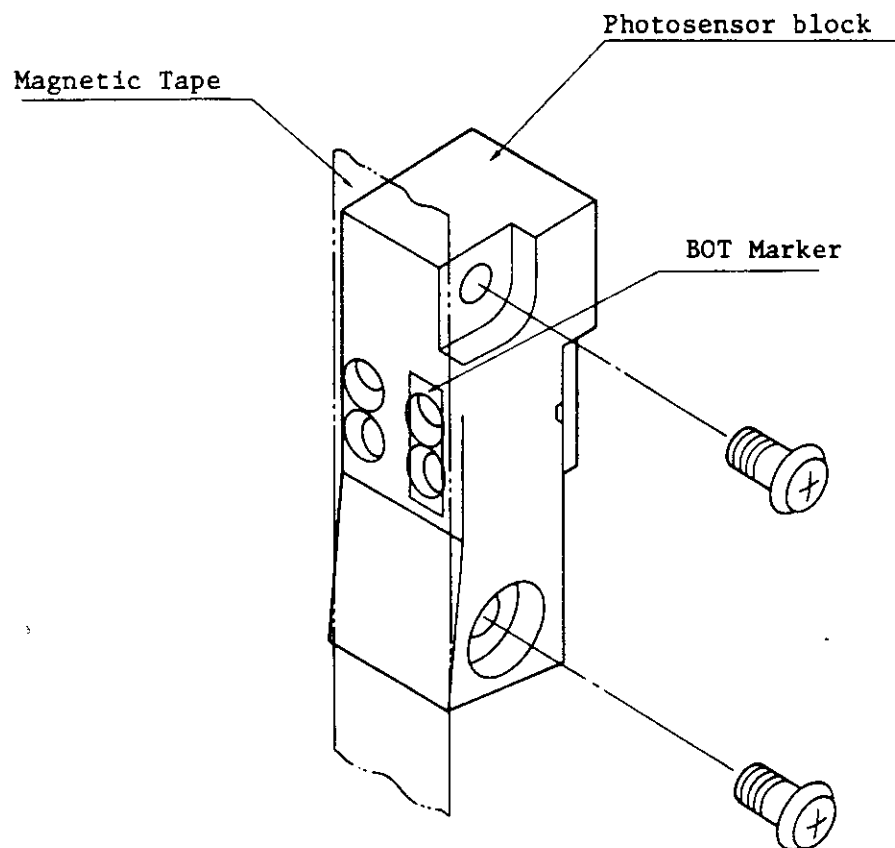


Figure L.4 BOT and EOT sensor



## I. Removal

- (1) Remove two screws at the front of the upper guide shown in Figure L.5 and remove the guide.
- (2) Remove two screws and remove the flange from the guide.

Note: Some models have a spring on the flange. Retain the spring for installation.

- (3) Remove two screws and remove the lower guide.
- (4) Remove four screws and remove the flanges from the front and rear of the guide.

## II. Installation

Install the upper and lower guides by reversing the steps for removal.

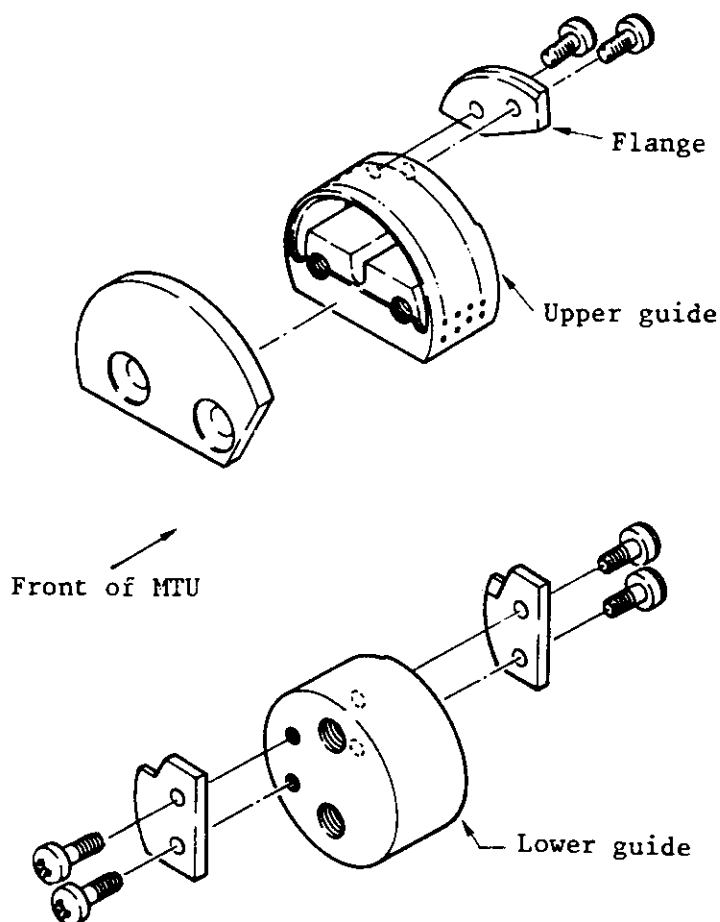


Figure L.5 Upper and lower tape guides

( Removing )

1. Remove two setscrews on the upper and lower guides.  
Note: Each moving guide has a spring behind the forced flange, use caution.
2. Remove moving flange from the guide by removing setscrew from the Insulator.

( Replacement )

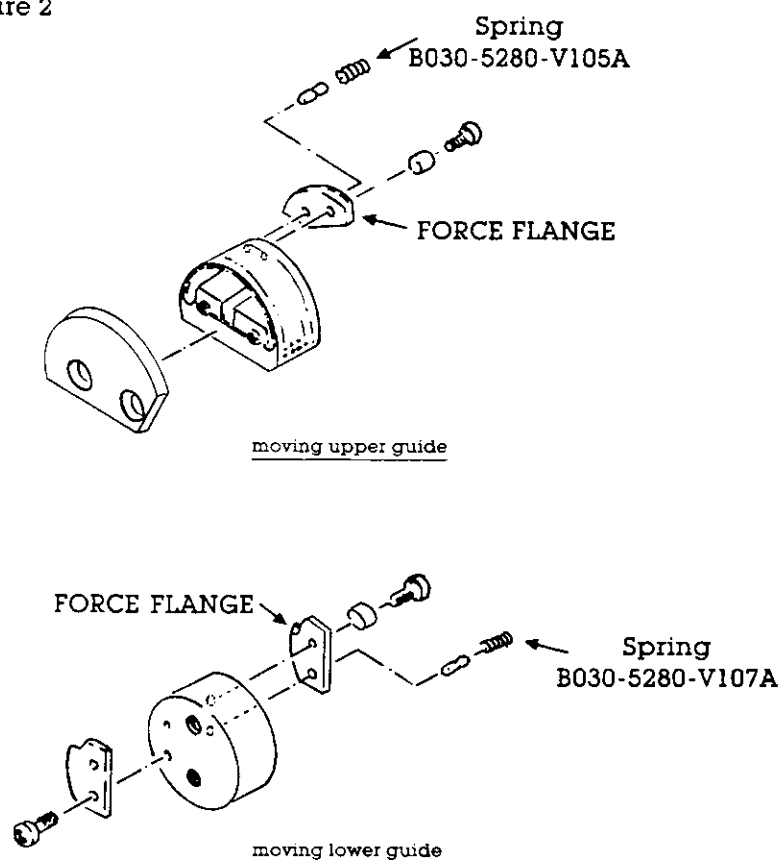
1. Perform the reverse procedure above ensuring that the guide is correctly located on its positioning pins.

Note: The spring fits into a shallow recess in the transport casting. Place the spring in the bottom corner of the recess then carefully move guide inserting the pin into the spring.

Important!

Do not mix springs between upper and lower guides. The upper guide spring is longer than the lower spring.

Figure 2



### I. Removal

Insert a flat-blade screwdriver into the slot of the roller guide and rotate it counterclockwise. The roller guide is shown in Figure L.6.

### II. Installation

Install the roller guide in the reverse order of removal.

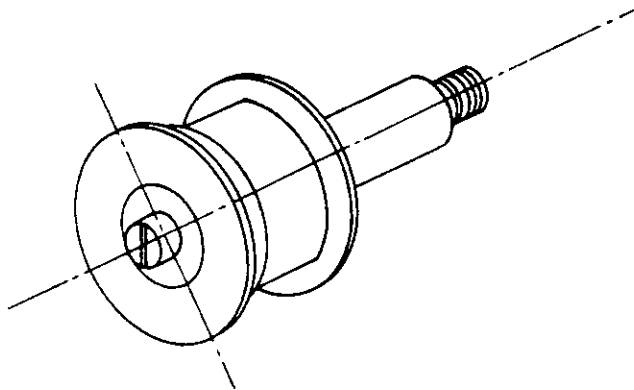


Figure L.6 Roller guide

## I. Removal

- (1) Disconnect (and tag) the connector from the upper motor. Disconnect (and tag) the connector from the lower motor and solenoid.
- (2) Remove the two screws securing the mounting bracket to the mounting block and remove auto cleaner shown in Figure L.7.

Note: Do not allow the auto cleaner to contact the read/write head during removal.

## II. Installation

- (1) Place the auto cleaner onto its positioning pin at the rear of block, and push down the cleaner until it reaches the block.
- (2) Install four screws securing the mounting bracket.
- (3) Connect the two connectors from the upper and lower motor and solenoid.
- (4) Perform auto cleaner checks and adjustments per K0290.

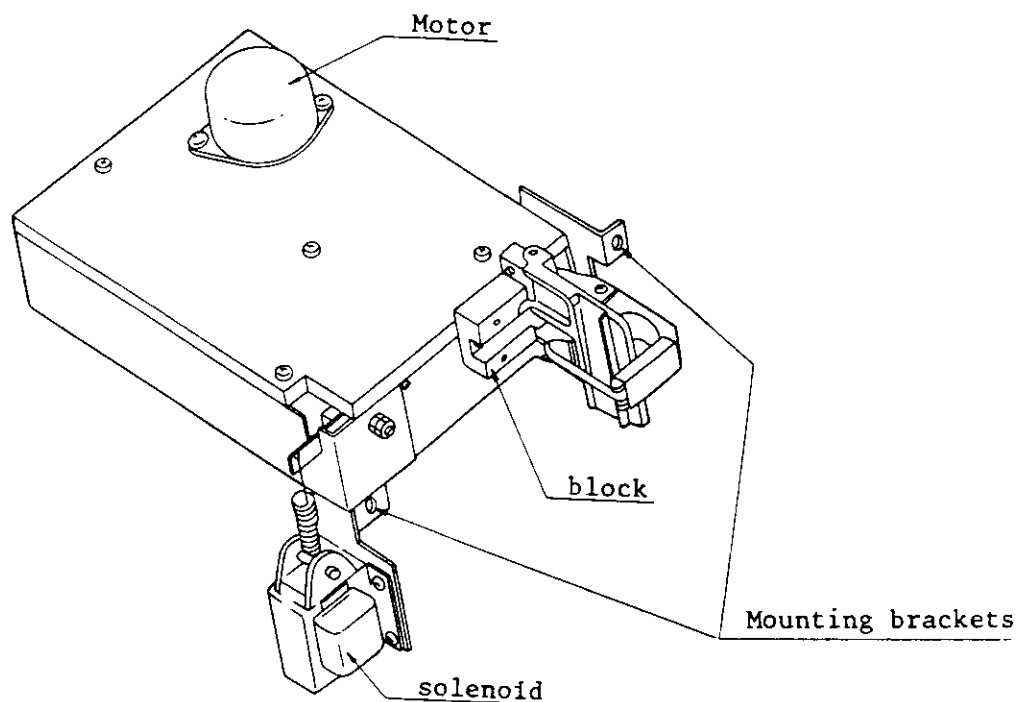


Figure L.7 Auto cleaner

L0130-1	Capstan Motor Removal and Installation
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## I. Removal

- (1) Disconnect connectors CNJ51 and CNP82.
- (2) Remove four nuts, washers, and springs accessible from the rear of the MTU, as shown in Figure L.8.
- (3) Carefully slide the motor out and off the shaft.

Note: Avoid damaging the capstan roller.

## II. Installation

- (1) Slide the motor onto the shaft of spring section.

Note: Avoid damaging the capstan roller.

- (2) Install two springs, washers, and nuts. Tighten the nuts (9 to 9-1/2 turns) to compress the spring.
- (3) Connect connectors CNJ51 and CNP82.
- (4) Perform capstan motor adjustment procedures (see L0130-2).

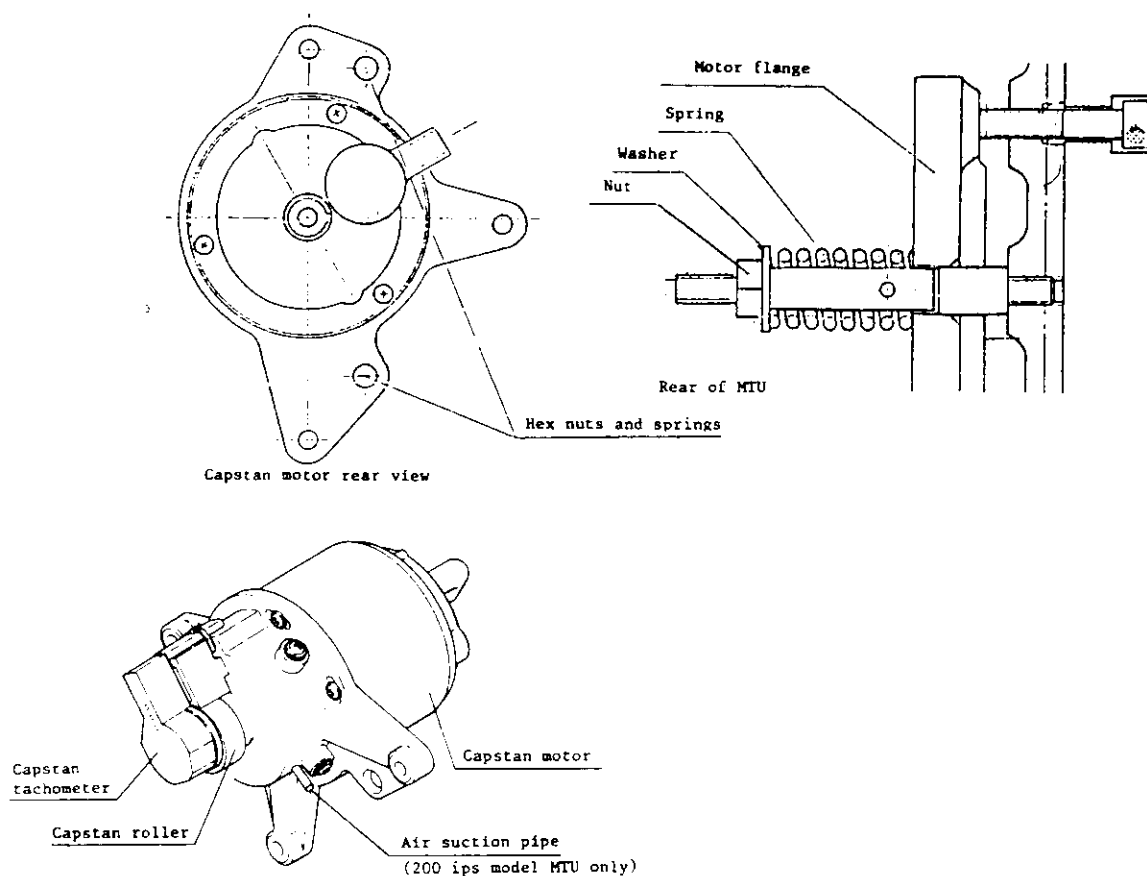


Figure L.8 Capstan motor

## I. Adjustment Precautions

- (1) Perform capstan motor adjustment procedures whenever the capstan motor has been replaced.
- (2) Use a good quality tape (12.63 to 12.65 mm wide).
- (3) Install the capstan motor so that the largest clearance is obtained between capstan and rib (see ① on Figure L.9).
- (4) If the adjusting screws ② and ③ are rotated two turns or more, check the clearance between capstan, rib ① and casting face ④ to prevent capstan damage.
- (5) During adjustment, check for the correct tape speed.

## II. Adjustment Procedure

- (1) Perform an auto load by mounting a tape and pressing LOAD/REWIND button on the MTU front panel. Remove the threading cover and lower channel.
- (2) Remove the front flange of lower tape guide ⑤ (see L0070) and re-install the tape guide.
- (3) Issue command \$01 then toggle the SSS switch using the field tester to rotate the tape in the forward direction. Adjust LH screw 3 so that the front edge of tape is just at the edge of the tape guide.
- (4) Issue command \$41 to rotate the tape in a reverse (backward) direction. Adjust the RH screw ② so that the front edge of tape is just at the edge of the tape guide.
- (5) Repeat steps (3) and (4) until the front and rear of the tape does not change positions when the tape motion is changed from forward to reverse, and back again.
- (6) After adjustment, rotate both the RH and LH adjusting screws clockwise. When the tape is in FWD or REW mode, the surface guides (B and C shown in Figure L.10) must be slightly visible.

Note: Excessive tape movement in the transverse direction requires that the adjustment be performed again.

- (7) Remove the tape by pressing UNLOAD and re-install the front flange of tape guide ⑤, threading cover, and lower channel.

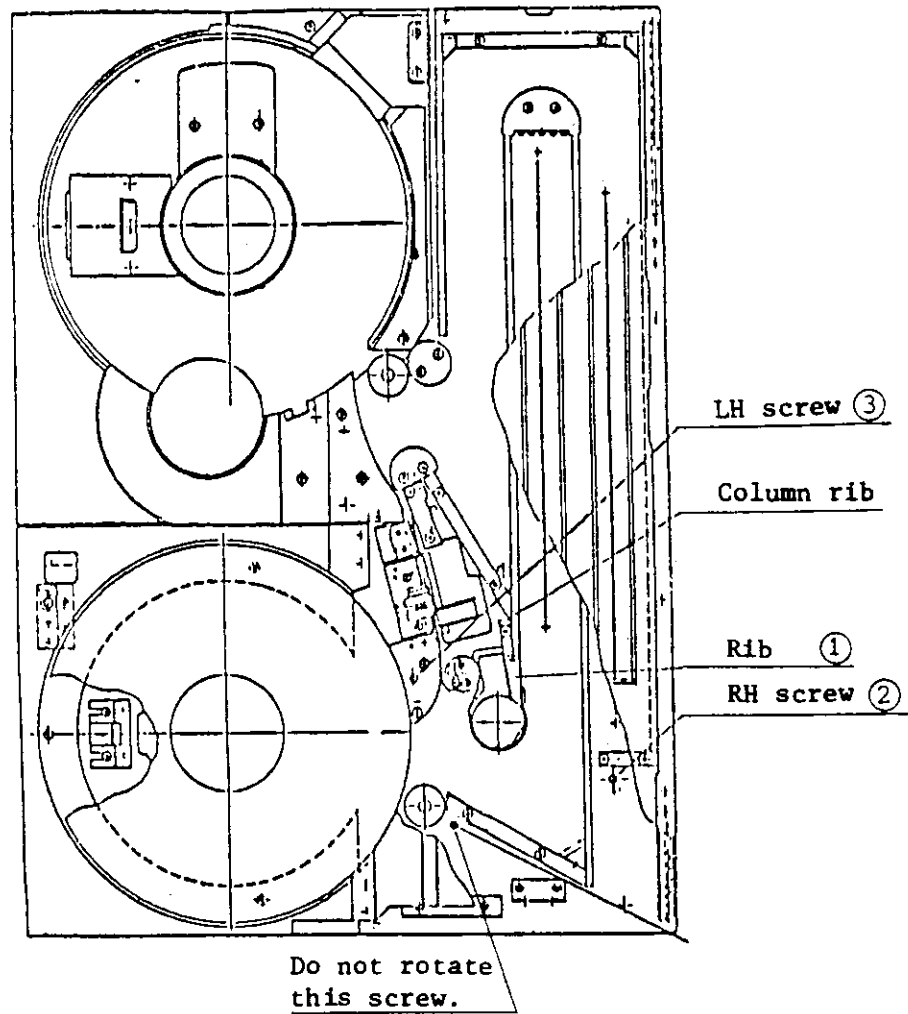


Figure L.9 Capstan adjustment

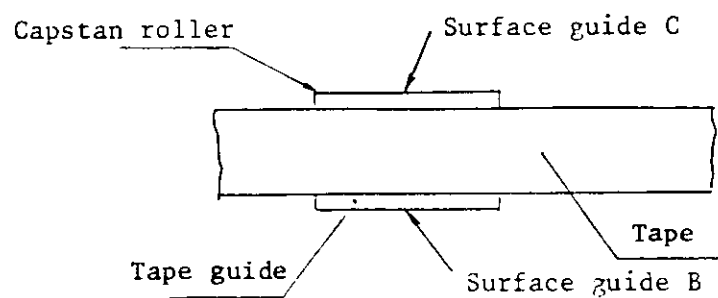


Figure L.10 Tape guides

I. Capstan Starting Time/Stop Time (Normal mode)

- (1) Issue command \$E0 with a field tester to put the MTU in the normal speed mode.
- (2) Issue command \$30 to perform the forward start/stop operation.
- (3) Trigger the leading edge of signal CAPGO at 1A05 AAV. 1A05 AAV and 1A04 ADV are also available on the MTUlogic gate motherboard. Check that the time T shown in Figure L.11 is in accordance with Table L.1.
- (4) Check that the time Ts shown in Figure L.12 is in accordance with Table L.2.
- (5) Issue command \$6A and perform a backward start/stop operation. Check the time T and Ts in the same manner as above.

Table L.1 Starting time, T

Running direction	Starting time			Check location
	75 ips	125 ips	200 ips	
FWD	1.50 to 2.00 ms	0.70 to 1.10 ms	0.70 to 1.10 ms	(DAC) PCA 1A04 at ADV
BWD	1.80 to 2.70 ms	0.90 to 1.25 ms	0.80 to 1.20 ms	

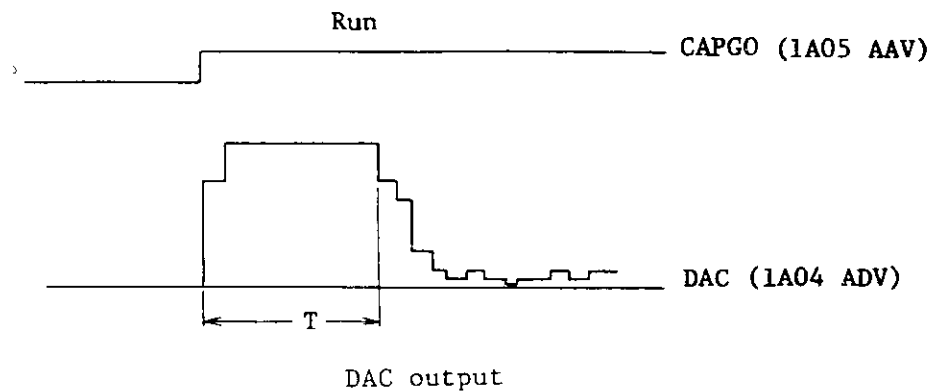


Figure L.11 DAC output-start time



Table L.2 Stop time,  $T_s$

Model	Stop time $T_s$ (FWD/BWD)	Vps (Maximum)	Check location
75 ips	$2.15 \pm 0.2$ ms	1.0 V	(DAC) PCA 1A04 at ADV
125 ips	$1.30 \pm 0.2$ ms	1.7 V	
200 ips	$1.20 \pm 0.3$ ms	1.7 V	

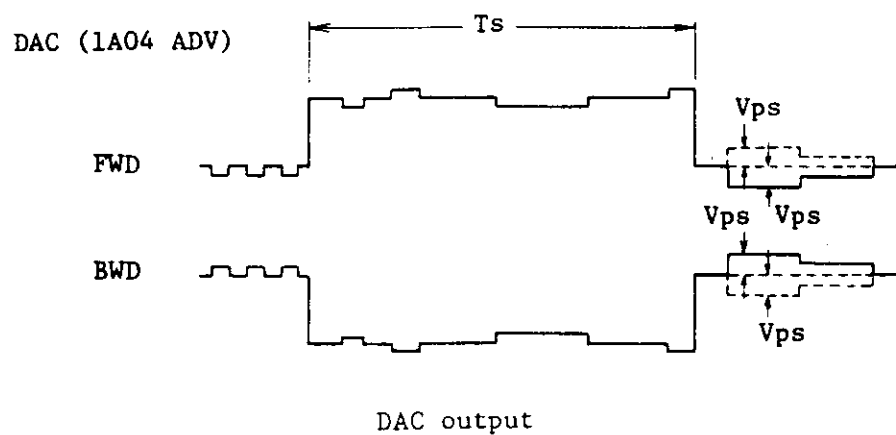


Figure L.12 DAC output-stop time

## II. Capstan Starting Time/Stop Time (Streaming Mode)

- (1) Issue command \$E4 with a field tester to put the MTU in the streaming mode.
- (2) Issue command \$25 to perform the forward start and stop operation. (See Figure L.13.)
- (3) Trigger the leading edge of signal ACT at 1A05 BE7, 1A05 E7, and 1A04 ADV are also available on the MTU logic gate motherboard. Check that the time Tst and Tsp shown in Figure L.13 is in accordance with Table L.3.
- (4) When in a streaming mode, the start and stop time can be measured by moving the tape either forward or backward. The backward start/stop operation is performed by issuing command \$65.

Table L.3 Streaming start (Tst) stop time (Tsp)

Model	Direction	Tst	Tsp	Max. Vco
125 ips	FWD	2.8 to 3.9 ms	$1.3 \pm 0.2$ ms	$\pm 1.7$ V
	BWD	2.4 to 3.6 ms		
200 ips	FWD	1.4 to 1.9 ms	$2.5 \pm 0.2$ ms	$\pm 1.7$ V
	BWD	1.3 to 1.8 ms		

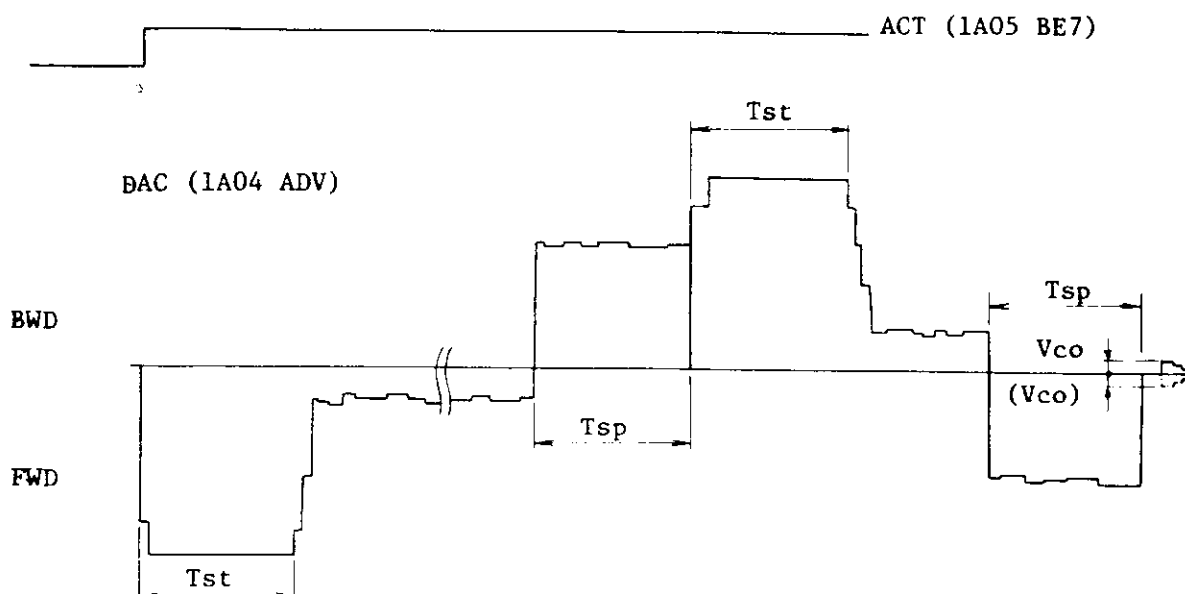


Figure L.13 DAC output (forward start/stop)/(backward start/stop)

L0140	Threading Chute and Restraint Member Replacement
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### I. Removal

- (1) Unscrew three threading chute mounting screws and remove the threading chute shown in Figure L.14.
- (2) Unscrew four restraint member mounting screws and remove the restraint member.

### II. Installation

- (1) Mount threading chute onto the positioning pins and secure with three screws.
- (2) Prior to installing the restraint member, press the gasket of the restraint member with finger. Ensure that the gasket returns to its original shape. If it does not return to original shape, replace the gasket.
- (3) Mount the restraint member on to the positioning pin and secure with four screws.

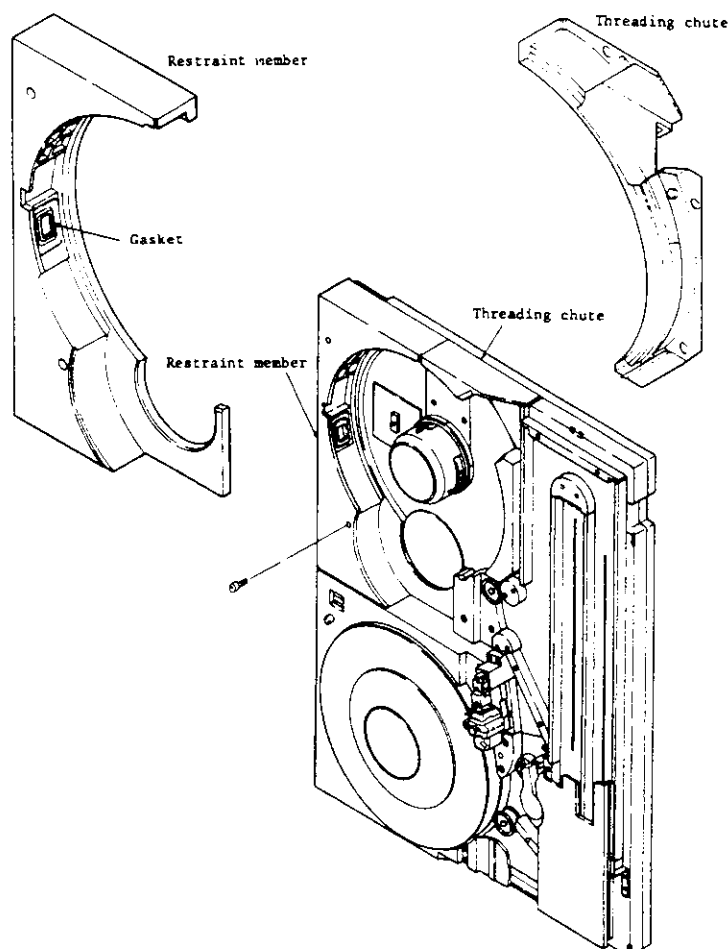


Figure L.14 Threading chute and restraint member

## I. Removal

- (1) Remove the plate retaining screw, shown in Figure L.15, and remove the plate.
- (2) Open the rear door on the MTU, and disconnect connector CNP52.
- (3) Remove the three screws (A), and remove the cartridge opener.

## II. Installation

- (1) Secure the cartridge opener onto the casting using three screws (A).
- (2) Connect connector CNP52.
- (3) Install the plate and the plate retaining screw.

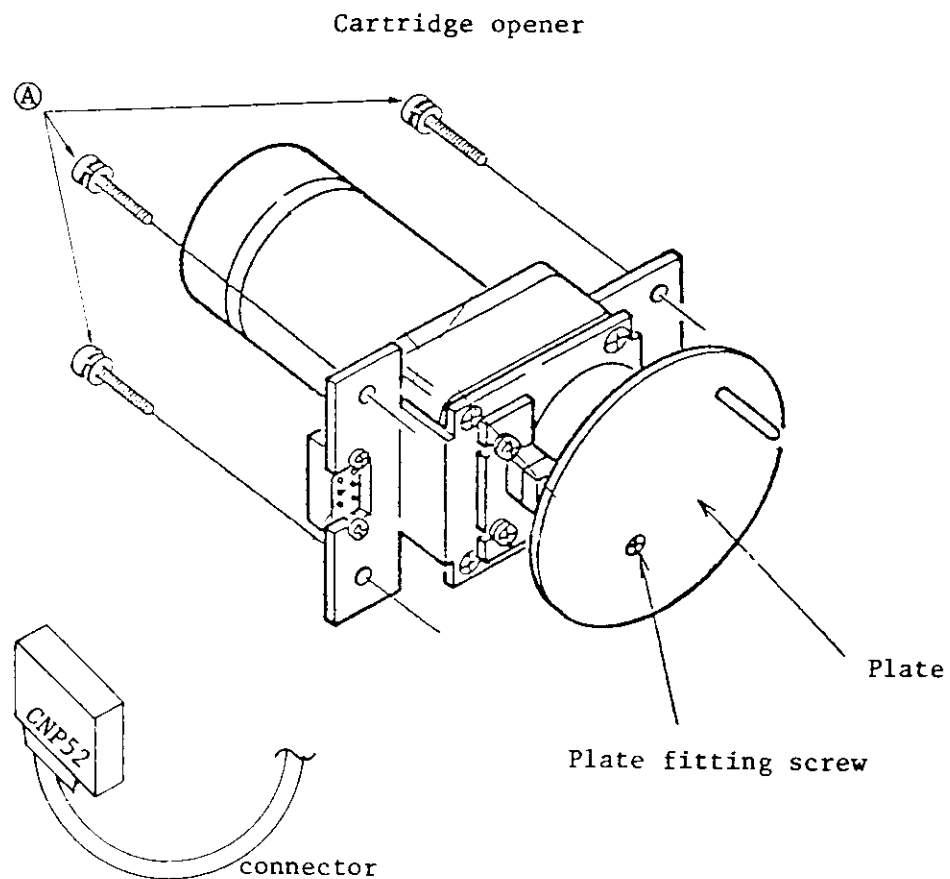


Figure L.15 Cartridge opener

## I. Removal

- (1) Open the rear door and disconnect connector CNP53 located above the file reel motor.
- (2) Remove the two error marker retaining screws shown in Figure L.16 and remove the error marker.

## II. Installation

Install the error marker by reversing the steps for removal.

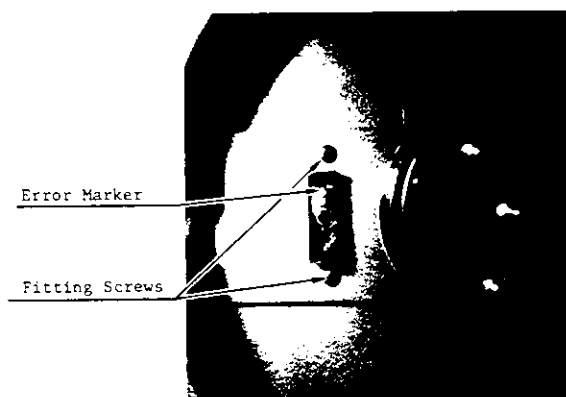


Figure L.16 Error marker

## I. Removal

- (1) Remove the two screws securing the file protection assembly on the panel shown in Figure L.17.
- (2) Pull out the file protection assembly and remove the air tube shown in Figure L.18.
- (3) Disconnect and tag the microswitch lead wires and remove the microswitch.
- (4) Remove the metal bracket from the file protection assembly.

## II. Installation

- (1) Install the microswitch on the file protection assembly with the glass cloth between the microswitch and the metal bracket.
- (2) Connect the microswitch lead wires.
- (3) Install the microswitch assembly onto the file protection assembly.
- (4) Connect the air tube.
- (5) Install the file protection assembly on the panel using two screws.
- (6) Check and adjust the file protection assembly (see K0260).

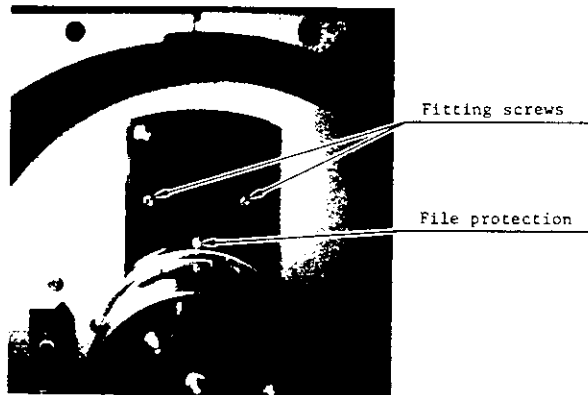


Figure L.17 File protection assembly (front view of MTU)

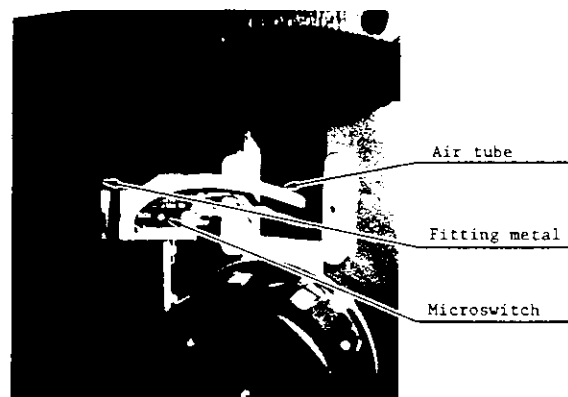


Figure L.18 Microswitch (rear view of MTU)

## I. Removal

- (1) Peel off the adhesive cover shown in Figure L.20.
- (2) Insert the 7.5 mm-thick cam alignment spacer (B960-0110-X085A) between the cover assembly and the cam.
- (3) Remove 6 screws (A) shown in Figure L.19 and remove the rear cover.
- (4) Remove screw (B) shown in Figure L.19 and remove the clamp.
- (5) Remove the rear housing assembly.
- (6) Remove the bushing.
- (7) Hold down the spring-loaded cover assembly while removing 3 screws (C) shown in Figure L.20. Remove the cover assembly.
- (8) Remove the cam assembly and cam return spring shown in Figure L.20.
- (9) Remove the latch assemblies together with the latch return, spring and roller assemblies shown in Figure L.20 and L.22.
- (10) Remove screw (D) shown in Figure L.20, and remove the reel boss from the motor shaft.

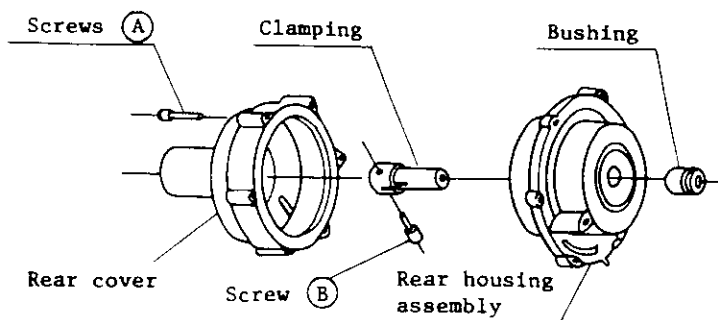


Figure L.19 Cover and reel boss assembly

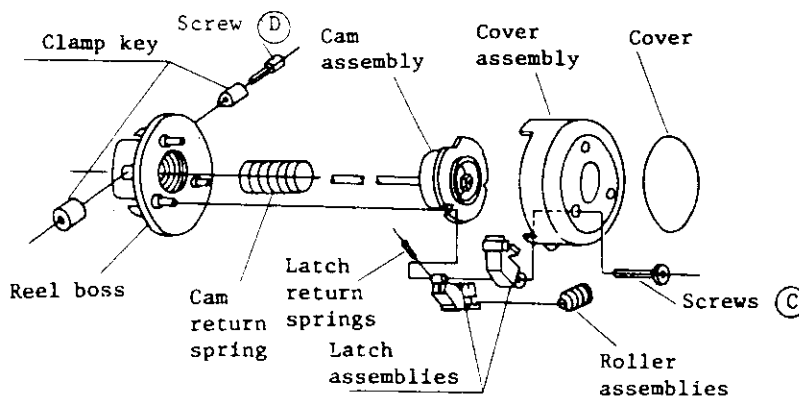


Figure L.20 Rear housing and rear cover assembly



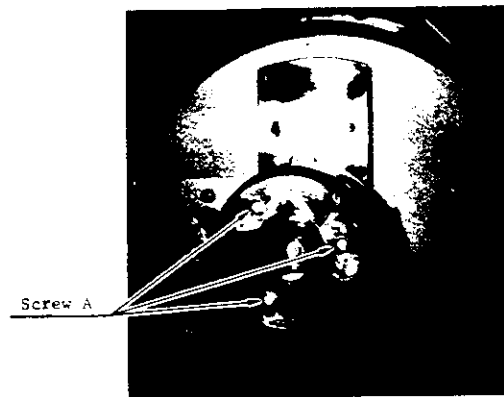


Figure L.21 Auto-hub rear cover assembly

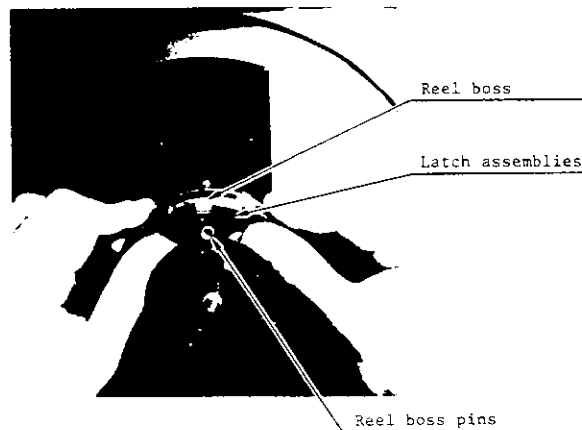


Figure L.22 Removal of cam assembly

## II. Installation

- (1) Mount the reel boss to the reel motor shaft using a clamp key, and adjust the reel boss position as follows (see Figure L.23):
  - (a) Remove the threading chute (L0140).
  - (b) Set the short pointer of dial gauge 4 mm to 6 mm and adjust the long hand of dial gauge 0.79 mm on the main column surface.
  - (c) Place the adjustment tool on the column surface.
  - (d) Adjust the reel boss position so that the distance between the vacuum column surface and the rubber ring on the reel boss surface is  $2.79 \pm 0.05$  mm. The long pointer of the dial gauge should indicate  $0 \pm 0.05$  mm.
- (2) Mount the roller assemblies and latch assemblies to the reel boss pins and the mount latch return springs (Figures L.19 and L.22).
- (3) Mount the cam assembly and cam return spring so that the three notches of the cam assembly are aligned with the pin positions.

- (4) While pressing the cover assembly by hand, install the three screws (C), shown in Figure L.20.
- (5) Insert the cam alignment spacer between the cover assembly and the cam.
- (6) Install the bushing on the reel motor shaft.
- (7) Mount the rear housing assembly so that the bushing is inserted into the bearing of the rear housing assembly. The housing assembly should be oriented so that the stopper screw on the rear side of the file reel (see Figure L.24) can be inserted into the screw hole on the housing.
- (8) Insert the clamp into the rear housing assembly. Install screw (B) shown in Figure L.23.
- (9) Install the rear cover using screws (A).
- (10) Remove the cam alignment spacer.
- (11) Install a new cover shown in Figure L.20.

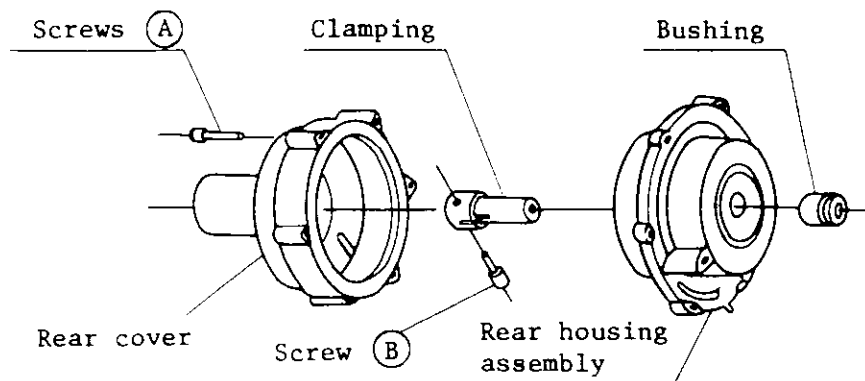


Figure L.23 Adjustment of reel boss position

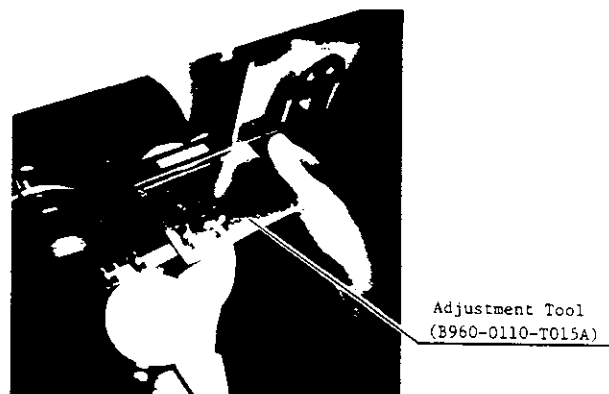


Figure L.24 Rear of file reel with stopper screw

## I. Removal

- (1) Remove the three screws (A) shown in Figure L.25, and remove the machine reel.
- (2) Remove screw (B), and remove the joint from the reel motor shaft.

## II. Installation

- (1) Use calipers to measure the distance between the joint flange surface and the reel motor shaft (C) in Figure L.25. Adjust the distance to 7.5 mm, and tentatively secure the joint with the screw (B).
- (2) Secure the machine reel with the screws (A). Remove the screws (D) and remove the front flange.
- (3) Remove the left threading channel.
- (4) Install the adjustment tool (B960-0110-T015A) on the main column surface, as described in L0180. The short pointer of the dial gauge must indicate 4 mm or 5 mm.
- (5) Place the adjusting tool on the reference plate, and hold it so that the dial gauge pin comes into contact with the rear flange at (E) in Figure L.25.
- (6) While manually rotating the machine reel, check whether the dial gauge reading, including fluctuation, is within the specified range.
- (7) Slightly pull out the whole assembly prior to the adjustment, and adjust the distance (F) into the specified range by gradually pushing in the assembly while measuring the distance.
- (8) Adjust the distance between the rear flange and the reference plate (F) in Figure L.25 to from 0 to 0.1 mm using the adjusting tool (B960-0110-T010A) shown in Figure L.26.
- (9) Tighten joint screw (B).
- (10) Install the front reel flange.

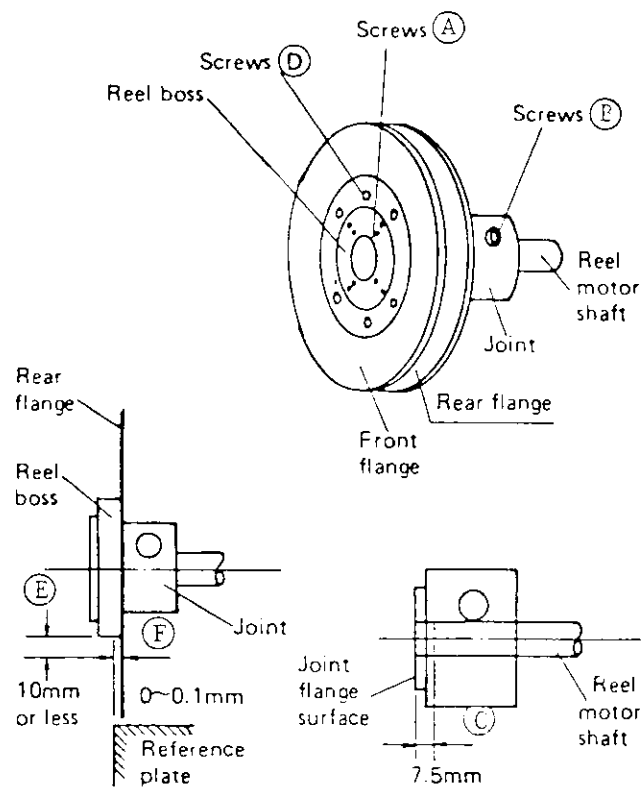


Figure L.25 Machine reel

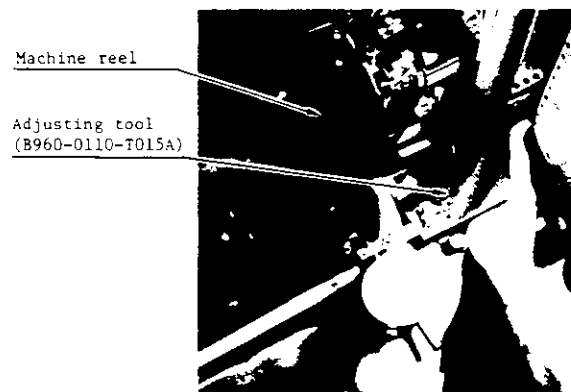


Figure L.26 Adjustment of machine reel

L0250	Low Tape Sensor Replacement
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I. Removal

- (1) Remove three screws (A) shown in Figure L.27, and remove the machine reel.
- (2) Disconnect connector CNJ56.
- (3) Remove two low tape sensor mounting screws and remove the low tape sensor.

II. Installation

- (1) Install the low tape sensor by reversing the steps, above, for removal.
- (2) Check low tape sensor detector level (see K0220).

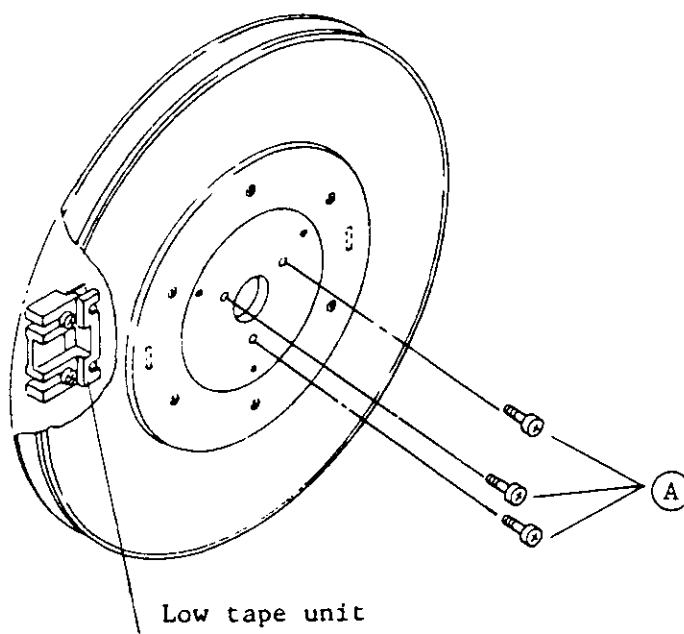


Figure L.27 Machine reel

L0260	Machine Reel Motor and File Reel Motor Replacement
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#### I. Removal of File Reel Motor (See Figure L.28)

- (1) Remove the error marker (see L0160).
- (2) Remove rear cover, clamping, rear housing assembly, and busing (see L0180).
- (3) Loosen the reel boss securing screw and pull out the autohub (see L0180).
- (4) Disconnect connector CNJ86.
- (5) Remove the four mounting bolts and remove the motor.

#### II. Removal of the Machine Reel Motor (See Figure L.29)

- (1) Remove the machine reel (see L0230).
- (2) Disconnect connector CNP88.
- (3) Remove the four mounting bolts and remove the motor.

#### III. Installation

Install the reel motors in the reverse order of removal.



Figure L.28 File reel motor



Figure L.29 Machine reel motor

L0270	Vacuum Column Cover (Glass Plate) Replacement
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I. Removal

- (1) Open column cover and remove five glass plate screws (see Figure L.30).
- (2) Remove the spring that holds the glass plate.

II. Installation

- (1) Install the glass plate in reverse order of removal.
- (2) Press the glass plate gently by hand in the vicinity of the spring. Check that the glass plate returns to its original position when released.

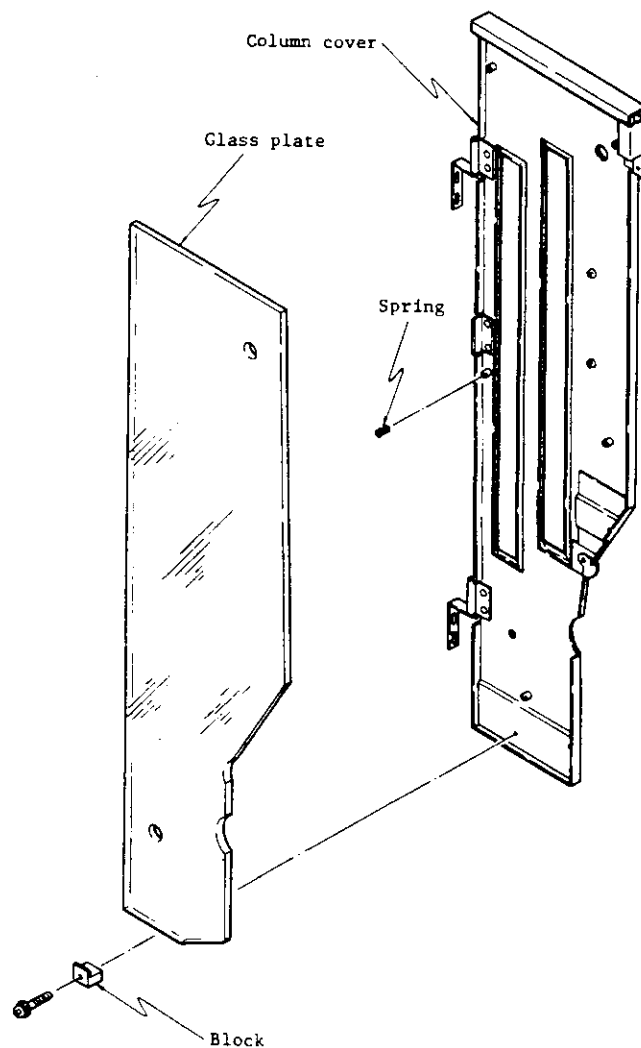


Figure L.30 Vacuum column cover



## I. Removal

Remove two roller catches located at the top and bottom left hand side of the column (see Figure L.31) by removing the attaching screws.

## II. Installation

- (1) Install each roller catch by re-installing the two screws.
- (2) When the cover is closed, check that each roller catch is firmly installed and that there is no gap between the column ribs and the glass.
- (3) If incorrect, adjust the roller catch within the oval mounting holes.

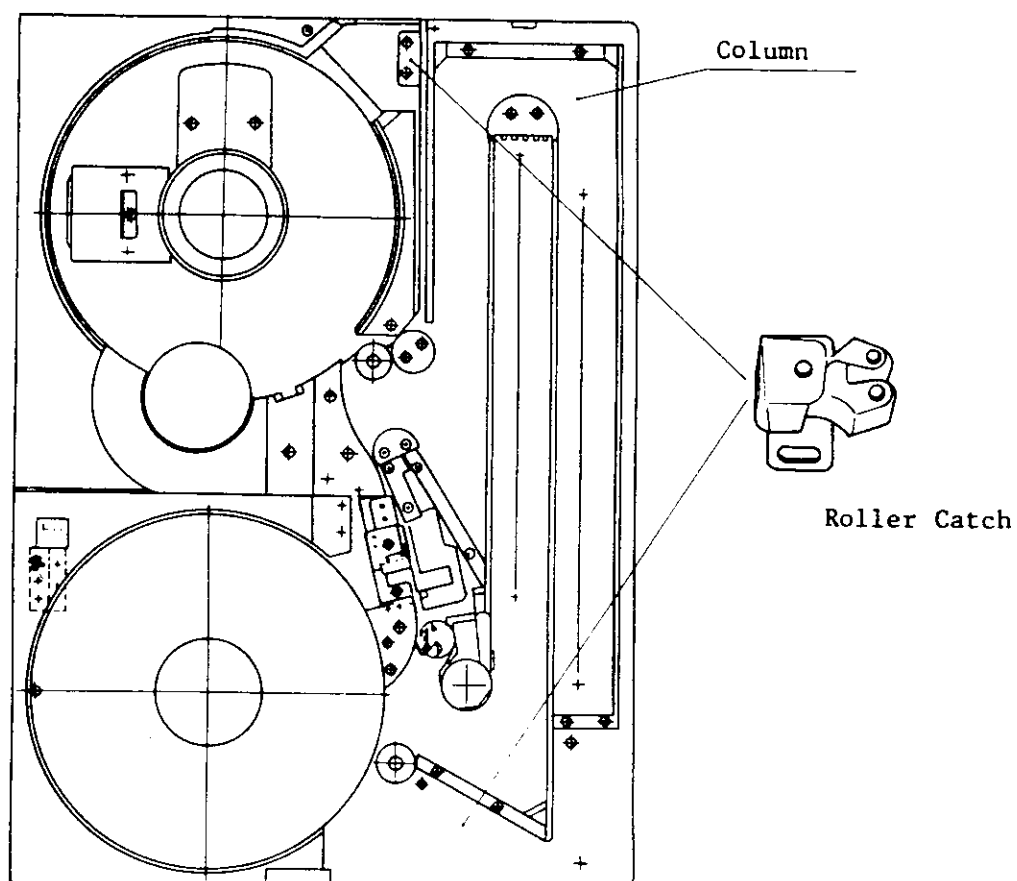


Figure L.31 Roller catch

## I. Removal

- (1) Remove the cover ① of the front door. (See Figure L.33 in L0300-2.)
- (2) Remove the cover ② over the two window microswitches.
- (3) Remove the microswitch to be replaced. See Figure L.32 for location of two microswitches.
- (4) Detach the leads from the terminal.

## II. Installation

- (1) Install the window microswitch(es) in the reverse order of removal.

**Note:** When the microswitch is being adjusted, the power supply unit must be turned off. However, the unit can be turned on, the window placed in the open or closed position by issuing command \$B6 from the field tester, and the power turned off again. Before putting the microswitch in the detecting status, loosen the mounting plate screws to prevent the actuator from being bent.

- (2) Adjust the gap between the microswitch and the actuator from 0.33 mm to 0.55 mm by loosening the adjustment screws, as shown in Figure L.32.
- (3) When the power supply is turned on and the window is opened and closed, check that the top of the window touches the sponge surface and that it is 0 to 2 mm above the bottom. If incorrect, readjust.

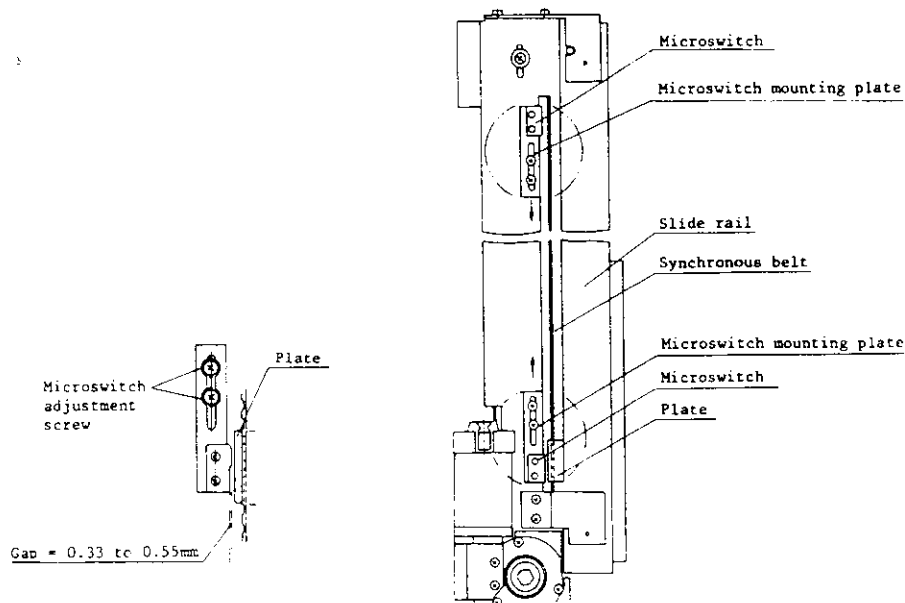


Figure L.32 Microswitch removal and adjustment

## I. Removal

- (1) Open the front door, and remove six cover screws and the covers.
- (2) Remove three window screws.
- (3) Disconnect connector CNP57.
- (4) Remove three auto window bracket screws and loosen the remaining screw. Slide the window to the left and remove the auto window bracket.

## II. Installation

- (1) Mount the auto window bracket onto the loosened screw, install the remaining screws, and tighten all four screws.
- (2) Install the window and tighten three screws. Connect connector CNP57.
- (3) Install covers. When mounting covers, do not place wires and cables between the covers and door.
- (4) After assembly is complete, ensure that the window operates correctly. Issue command \$B6 with the field tester.

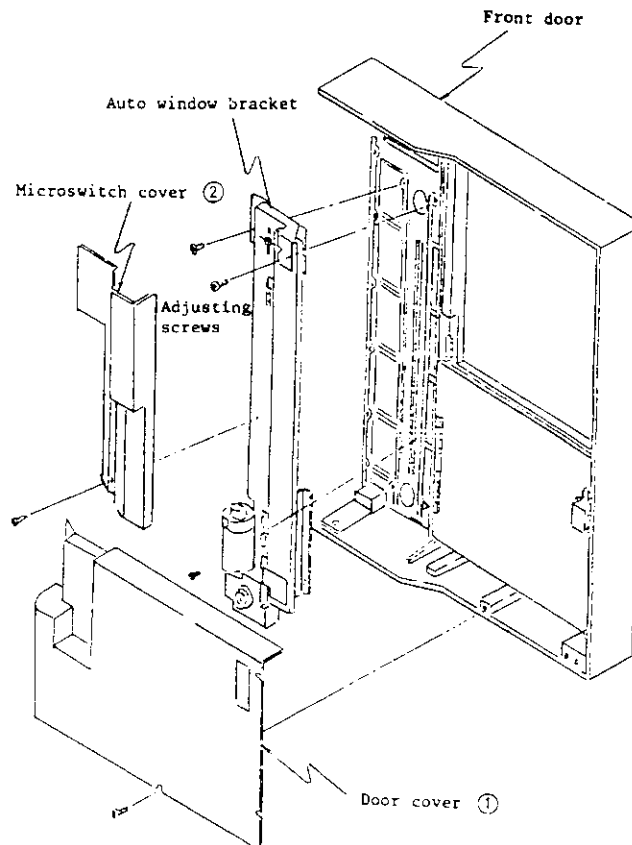


Figure L.33 Auto window bracket

## I. Removal

- (1) Loosen the hex socket screw on the moving pulley shown in Figure L.34 to decrease belt tension.
- (2) Remove the belt from the fixed pulley. Loosen the hex screw and remove the fixed pulley.
- (3) Remove four microswitch screws.

**Caution:** Never remove or loosen screws on the base plate. These screws have been adjusted for proper positioning.

- (4) Remove cable clamping screws.
- (5) Remove four clutch assembly screws and the clutch assembly.
- (6) When replacing the belt, first remove four screws from the slide rail mounting plate and remove the mounting plate. Remove and replace the belt.

## II. Installation

- (1) Install the front door clutch assembly by reversing the steps, above, for removal.
- (2) Check that the belt tension is from 0.11 to 0.17 kg at a deflection of 7.8 mm and at a distance of 242 mm from the center of either pulley.

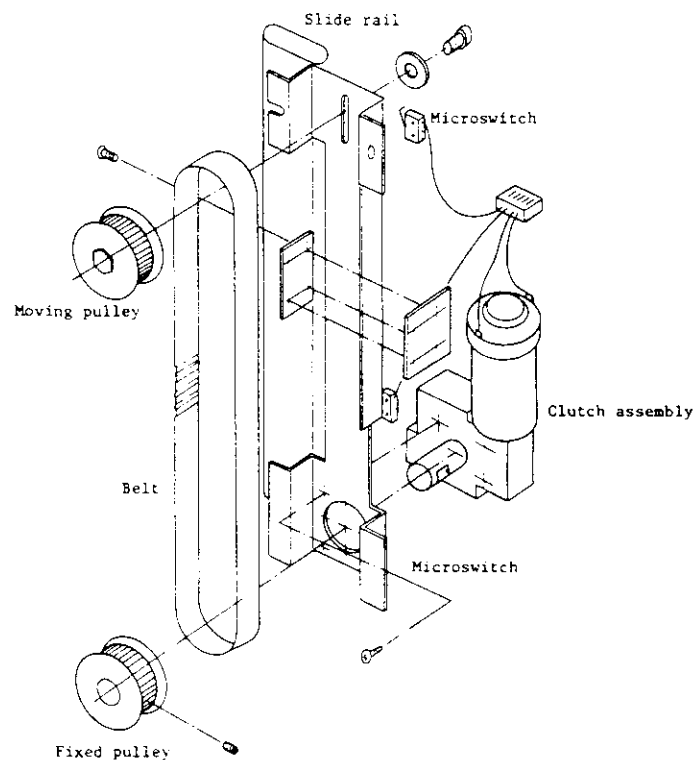


Figure L.34 Clutch assembly

## I. Removal

- (1) Disconnect all hoses and tubes from the rear of vacuum and pressure assembly shown in Figure L.35.
- (2) Disconnect connector CHP65, located on the rear of the MTU power supply unit. To access CNP65, open the lower, left-hand front door of the MTU. Remove six screws and the access plate.
- (3) Remove six mounting screws on the vacuum assembly and four mounting screws on the pressure assembly. Remove the two assemblies. (Note that in some models, the assemblies are jointed to form a single unit.)

## II. Installation

- (1) Install the vacuum and pressure valve assembly by reversing the steps, above.
- (2) Install the vacuum assembly first and the pressure assembly next (when these units are separate).

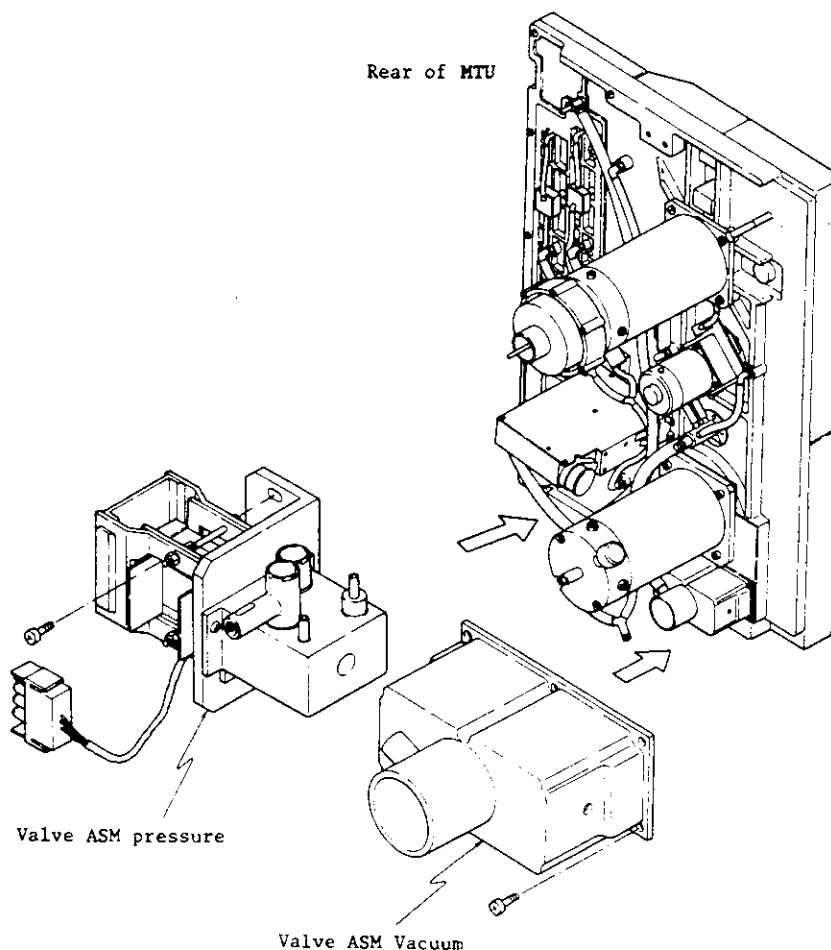


Figure L.35 Vacuum and pressure valve assembly

#### Removal and Installation

- (1) Loosen the hoses bands at both ends of the restrictor shown in Figure L.36. Remove the restrictor. When attaching the restrictor, connect the hoses to both ends, and fasten them with the hose bands.
- (2) Check and adjust the pressure and vacuum level. (See K0190).

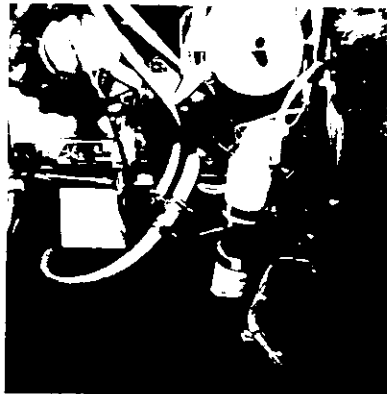


Figure L.36 Restrictor

I. Removal

- (1) Open the rear doors and disconnect the connectors from the fans shown in Figure L.37.
- (2) Remove four fan mounting screws and remove the fans.

II. Installation

- (1) Install the FMT and MTU logic gate in the reverse order of removal.
- (2) Ensure the fans are operational (rotating) after replacement.

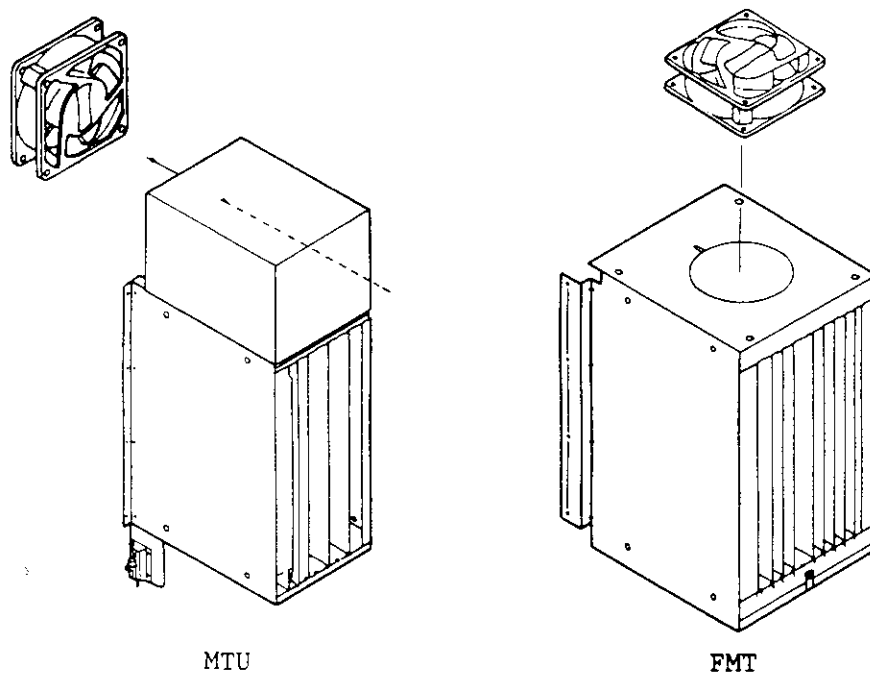


Figure L.37 FMT/MTU logic gate fans

## I. Removal

- (1) Open the lower left-hand doors on the MTU front panel.
- (2) Remove the filter, and disconnect connector CNH42.
- (3) Remove four screws and remove the fan.

## II. Installation

- (1) Install the air supply cooling fan in the reverse order of removal.
- (2) Ensure that the fan is operational (rotating) after replacement.

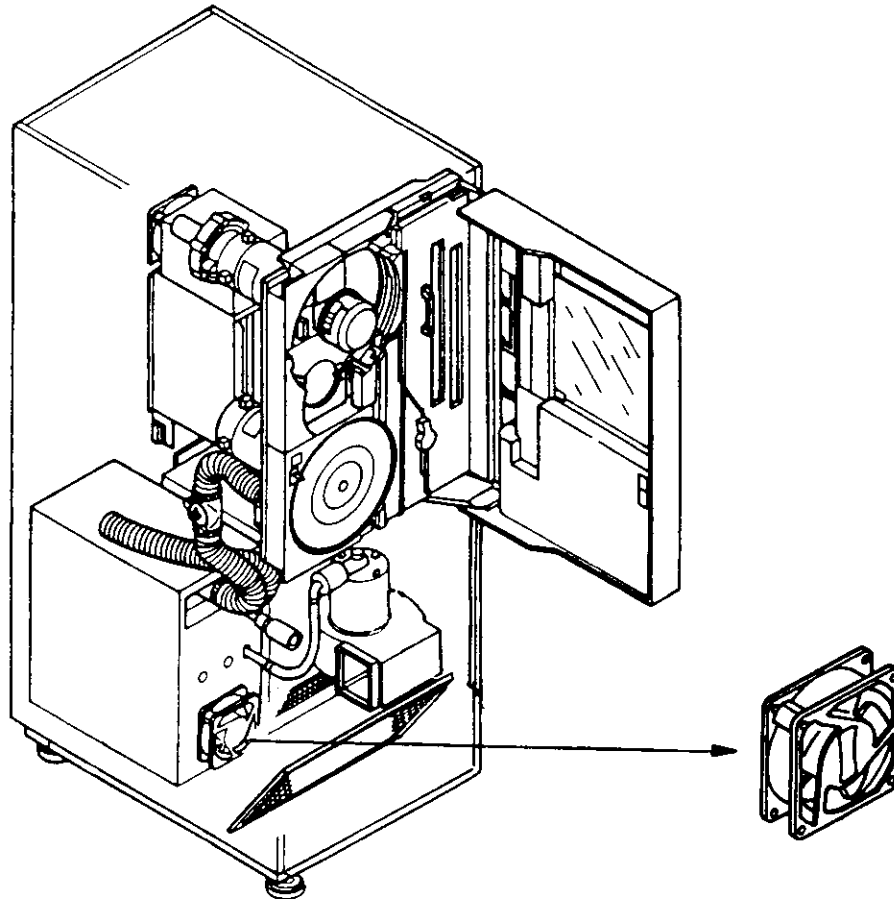


Figure L.38 Air supply unit cooling fans



## I. Removal

- (1) Disconnect connector CNP46.
- (2) Remove the six nuts and remove the duct from the rear door shown in Figure L.39.
- (3) Remove two screws and remove the fan.

## II. Installation

- (1) Install the rear door fan in the reverse order of removal.
- (2) Ensure that the fan is operational after replacement.

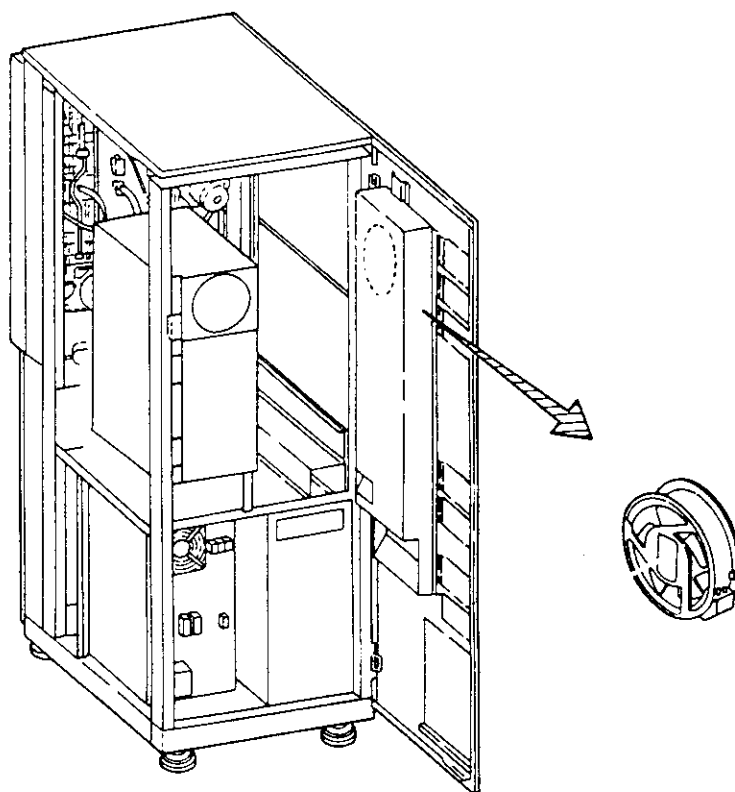


Figure L.39 Rear door fan

## I. Removal

- (1) Open the lower left-hand door on the MTU front panel and open the internal door by removing two screws.
- (2) Remove six screws and remove the panel to gain access to the fan assembly shown in Figure L.40.
- (3) Disconnect connector CNP43.
- (4) Remove two screws and remove the fan assembly.

## II. Installation

- (1) Install the fan unit in the reverse order of removal.
- (2) Ensure the fan is operational (rotating) after replacement.

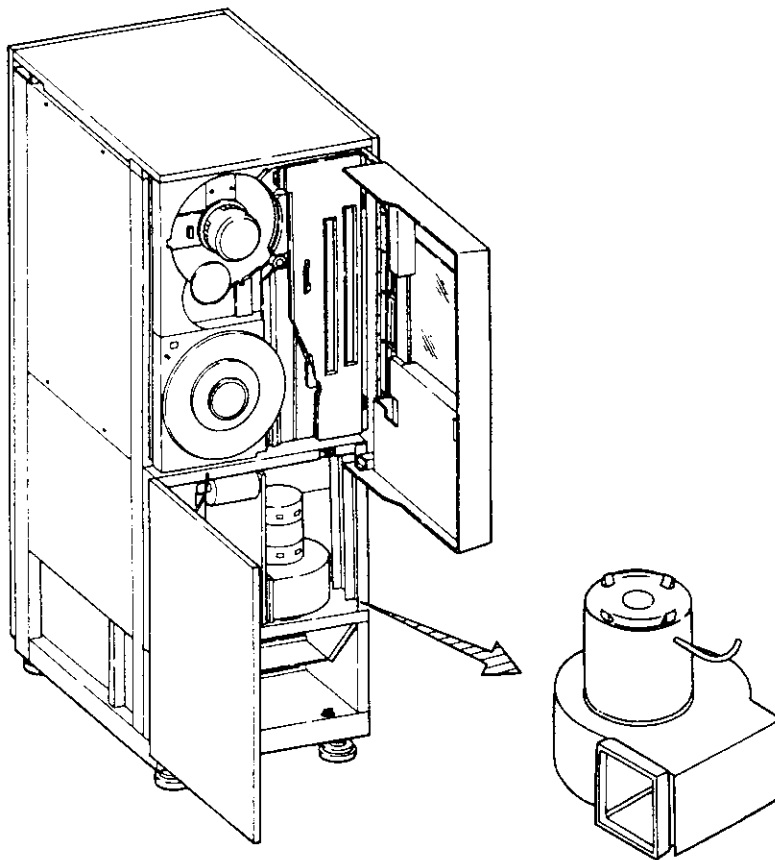


Figure L.40 Fan assembly

#### I. Removal

The FMT power supply fan is located on the top of each power supply unit. The MTU power supply fan is located at the rear of the MTU on the power supply unit. Unplug each fan, remove four screws, and remove the fan.

#### II. Installation

Install each fan by reversing the steps, above, for removal.

### I. Removal

- (1) Open the lower left-hand front door of the MTU and remove the filter shown in Figure L.41.
- (2) Clean the filter (J11).

### II. Installation

Ensure the filter is completely dry before replacement.

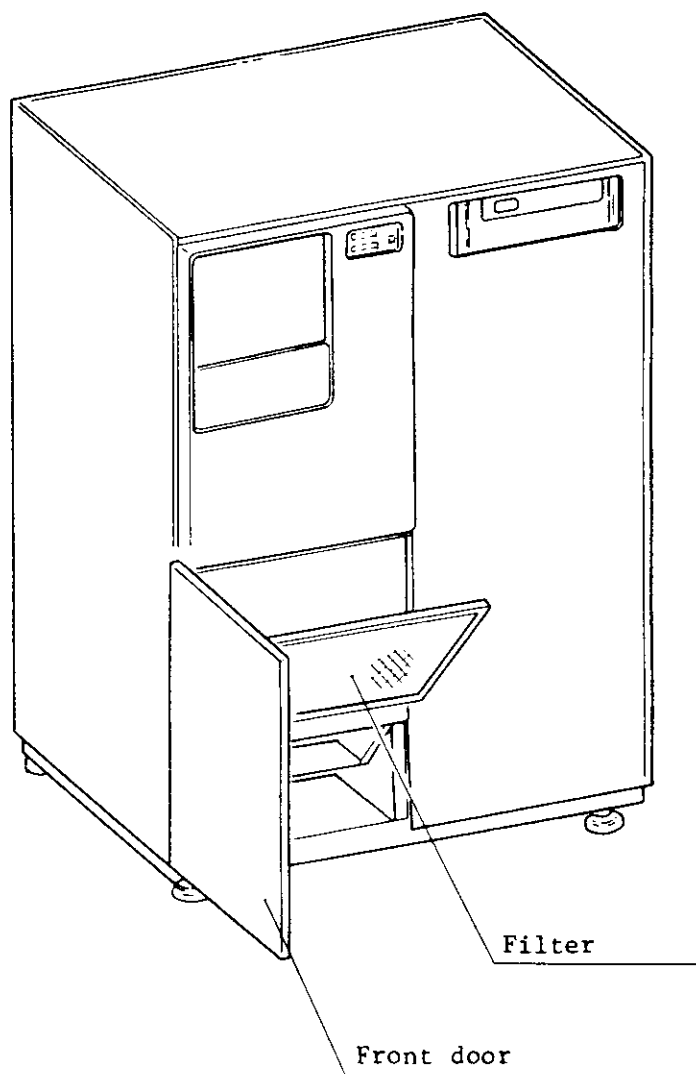


Figure L.41 Air filter

L0380	Absolute Filter Replacement
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### I. Removal

- (1) Open the lower left-hand front door of the MTU to locate the absolute filter.
- (2) Remove the tube from the hose tap, as shown in Figure L.42.
- (3) Remove three screws.
- (4) Carefully unscrew the absolute filter off the joint.

### II. Installation

**CAUTION:** When mounting the absolute filter, do not turn the hose tap, shown in Figure L.42.

Install the absolute filter by reversing the steps, above, for removal.

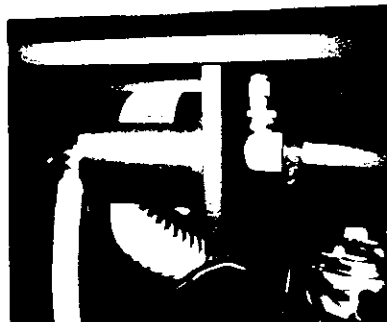
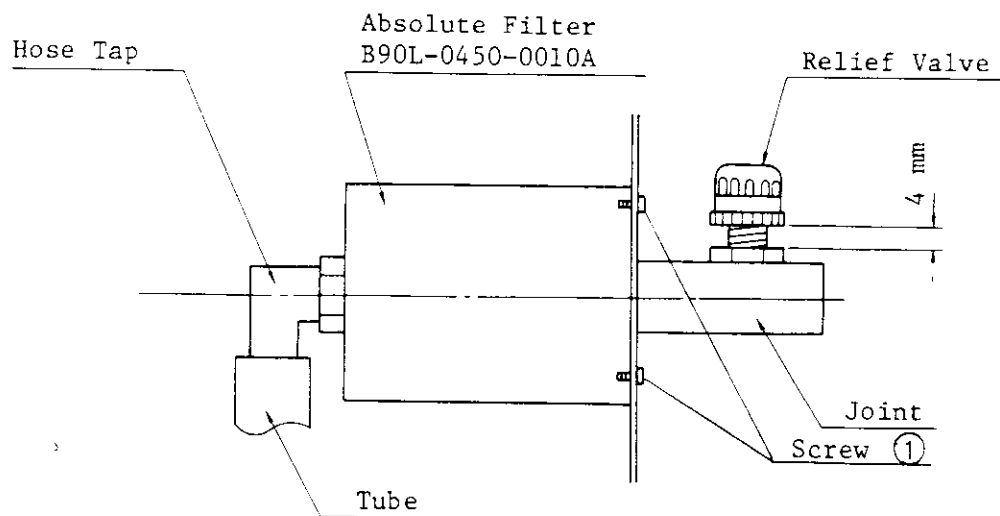


Figure L.42 Absolute filter

## I. Removal

- (1) Open the MTU lower left-hand door. Remove six screws and remove the plate to gain access to the front of the air supply unit.
- (2) Disconnect the hose from the blower air inlet and blower air outlet, shown in Figure L.43.
- (3) Disconnect the tube at the pump outlet.
- (4) Disconnect power connector CNP44 of air supply.
- (5) Remove two screws ① at the front of the air supply unit.
- (6) Open the MTU rear door and remove four screws ② and remove the air supply unit mounting bracket.
- (7) Remove the air supply unit.

## II. Installation

- (1) Install the air supply unit by reversing the steps, above, for removal.
- (2) Perform the pressure check in K0190.

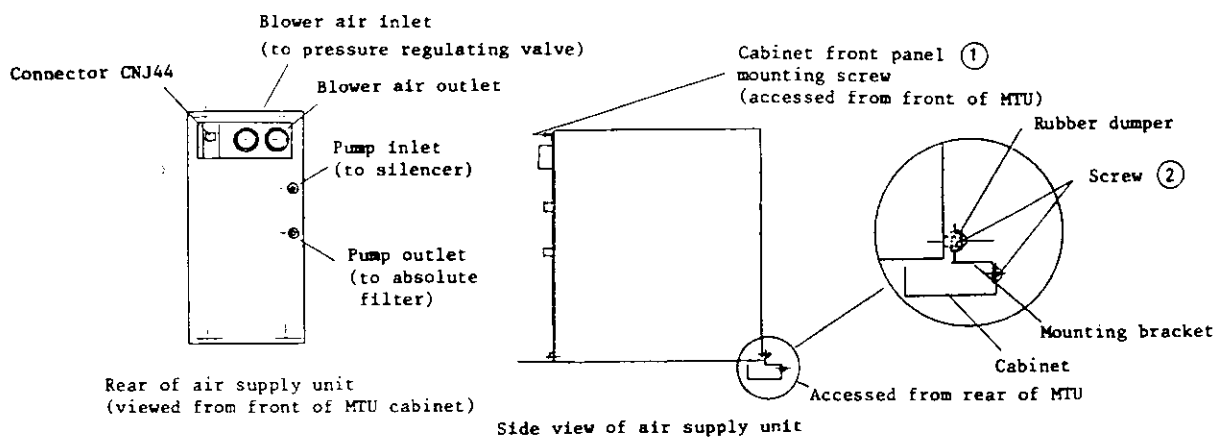


Figure L.43 Air supply unit

L0400-2	Air Supply Unit Belts Replacement
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Note: The air pump belt can be replaced and adjusted while the air supply unit remains in the cabinet. Replacement and adjustment of the vacuum blower belt requires that the air supply unit be removed from the cabinet.

#### I. Removal

- (1) Remove the cover plate to gain access to the belts, shown in Figure L.44. Refer to K0190 and K0200 for additional belt installation data.
- (2) Loosen the upper pulley and remove the old belt.

#### II. Installation

- (1) Install the new belt with the upper pulley adjustment screws loosened. Note the correct pulley orientation shown in Figure L.45. Refer to K0190 and K0200 for additional installation data.
- (2) Place a spring balance against the belt at a position midway between upper and lower pulleys.
- (3) Adjust the belt tension to 29 to 34 pounds, and tighten the pulley adjustment screws.

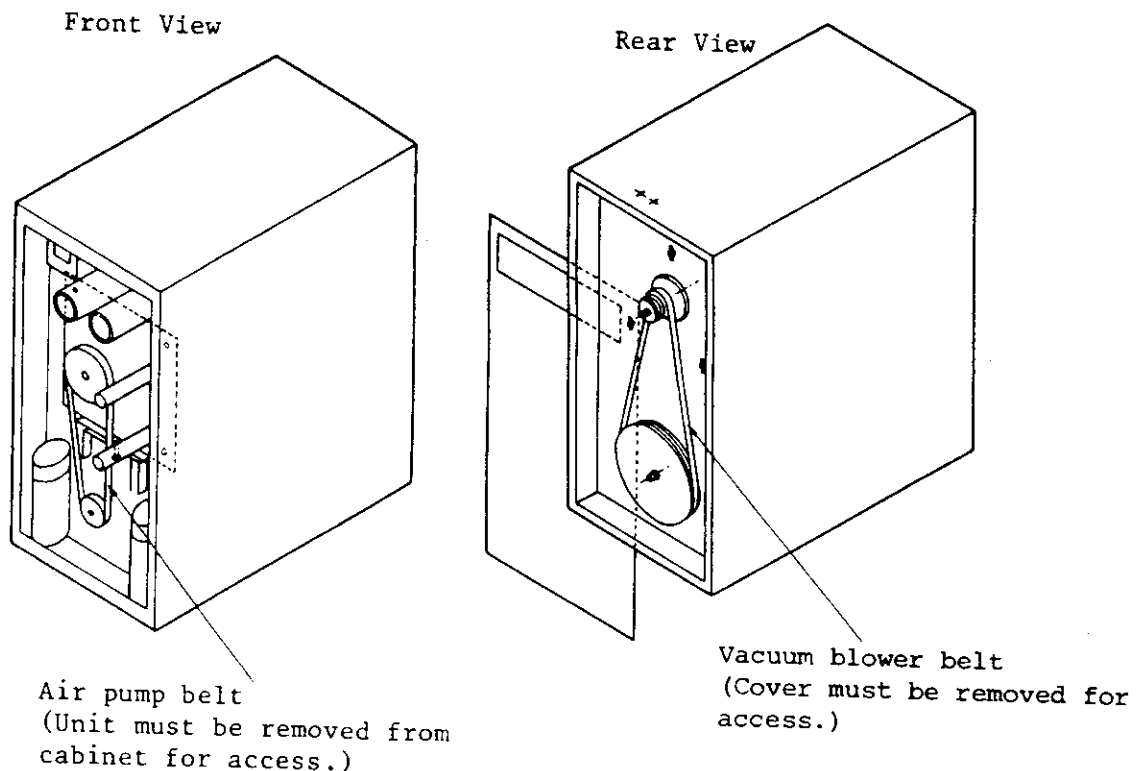


Figure L.44 Air supply unit belts

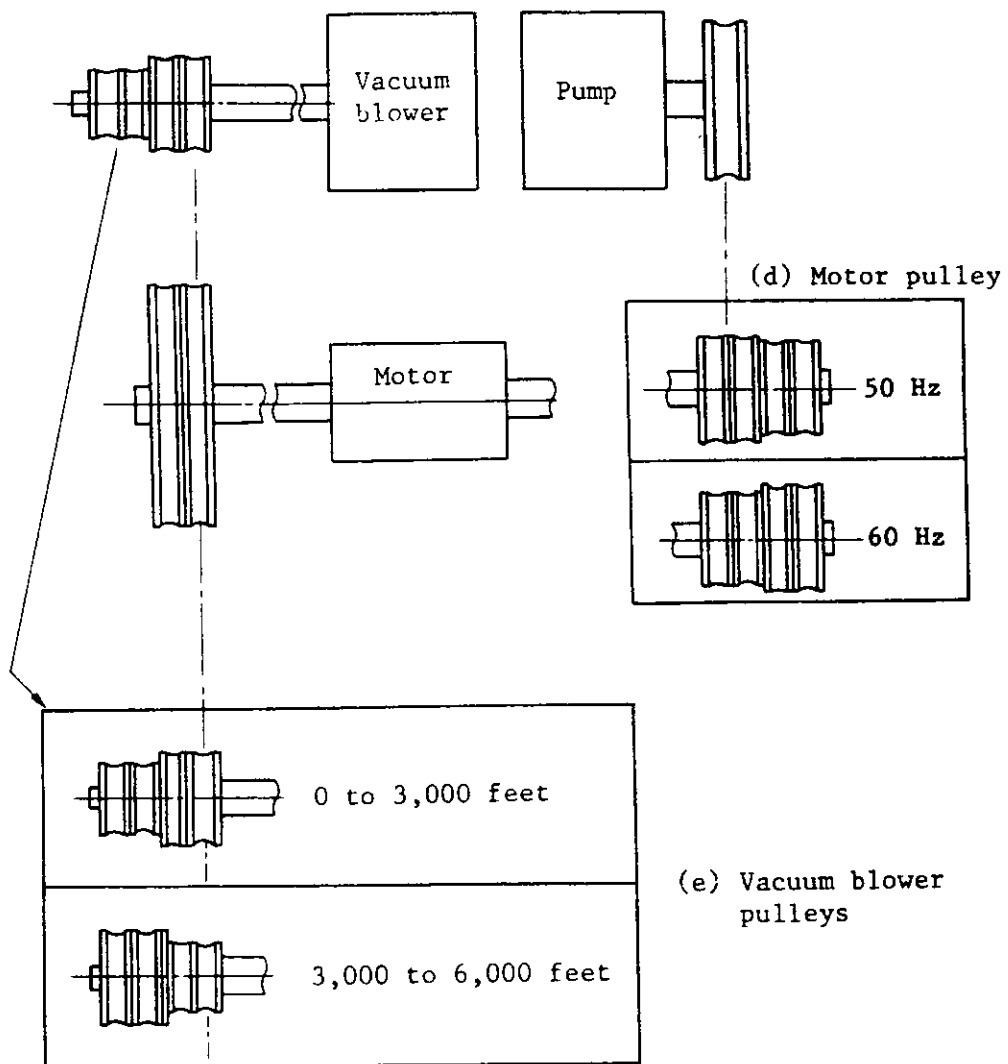


Figure L.45 Air supply unit pulleys



I. Removal

- (1) Open the vacuum column cover and threading cover.
- (2) Remove two screws from the upper hinge.
- (3) Pull up the threading cover and remove it.

II. Installation

- (1) Install the threading cover in the reverse order of removal.
- (2) Check to be sure that no interference occurs between the vacuum column cover and threading cover.

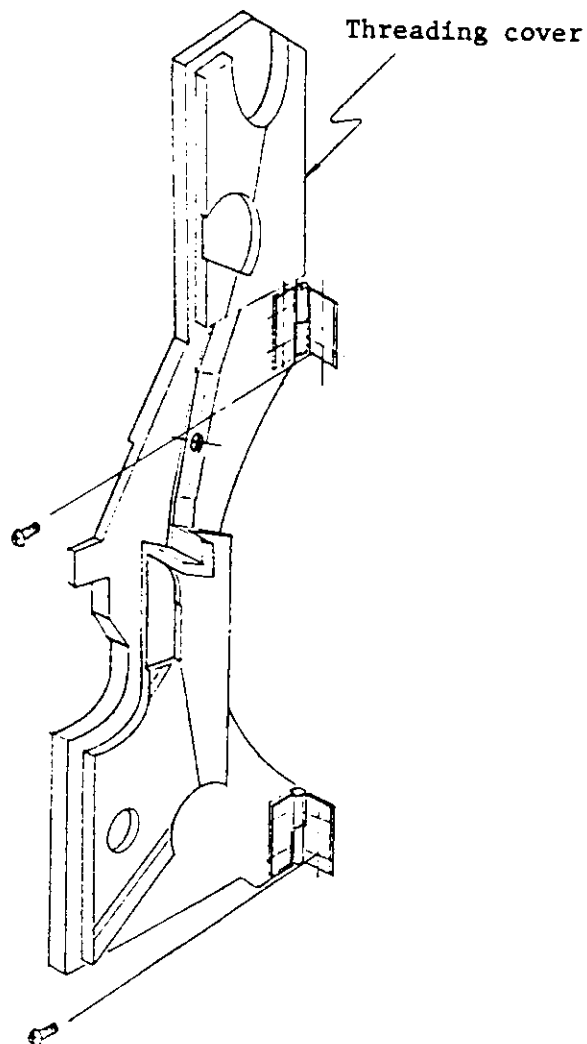


Figure L.46 Threading cover

L0420	Cartridge Sensor Replacement
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I. Removal

- (1) Open the MTU rear door and remove two cartridge sensor mounting screws.
- (2) Disconnect the microswitch leads and remove the cartridge sensor.

II. Installation

- (1) Install the cartridge sensor in the reverse order of removal.
- (2) Ensure that the cartridge detector rod operates smoothly and returns by spring force.

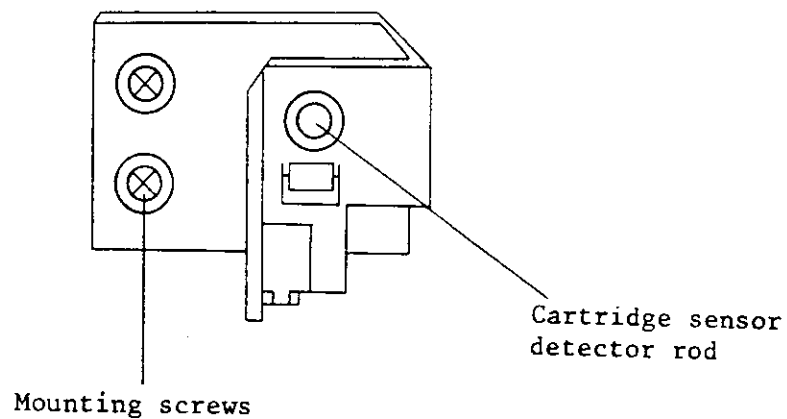


Figure L.47 Cartridge sensor

## L0430 Capacitive Sensor Replacement

### I. Removal

- (1) Disconnect connectors CNJ55R and CNJ55L, and terminals SWP1 and SWP2 from the capacitive sensor, shown in Figure L.48.
- (2) Disconnect the air tubes at the location shown in Figure L.49.
- (3) Remove six capacitive sensor mounting screws and remove the capacitive sensor.

### II. Installation

- (1) Install the capacitive sensor by reversing the steps, above, for removal.
- (2) Perform the checks and adjustments described in K0240.

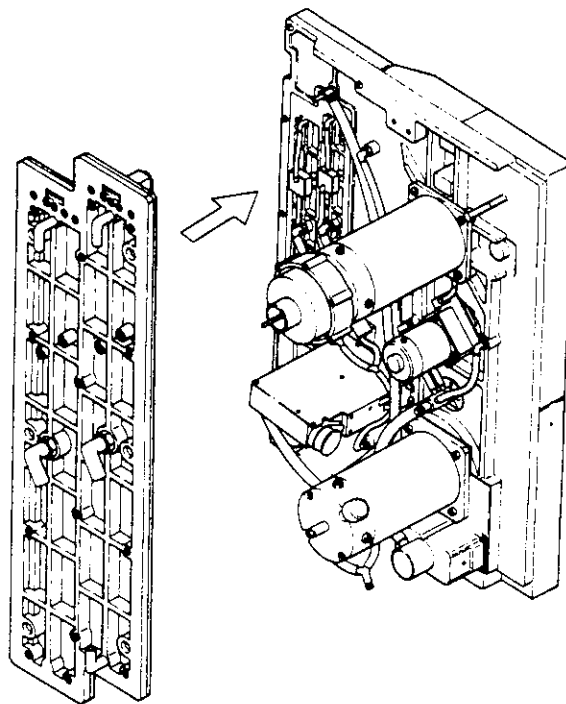


Figure L.48 Capacitive sensor

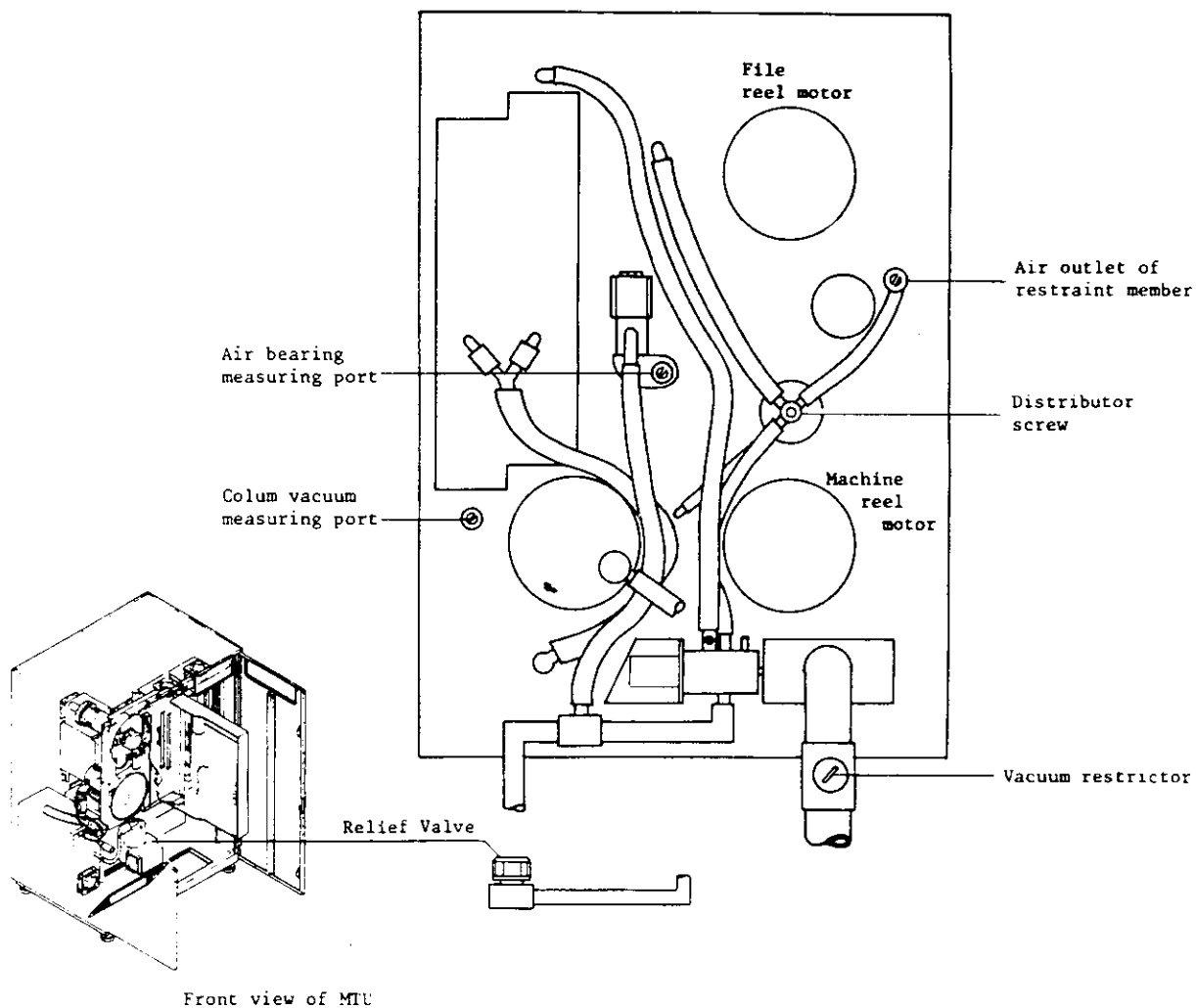


Figure L.49 Air tubes

L0440	Power Supply Unit Replacement
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**WARNING:** Ensure that the power cord has been disconnected from facility power before proceeding.

**I. Removal**

- (1) Disconnect and tag all connectors and leads from the power supply unit including the fan connector and frame ground leads.
- (2) Remove four screws and the mounting bracket.
- (3) Remove the power supply unit at the rear of the MTU.

**II. Installation**

- (1) Install the power supply unit by reversing the steps, above for removal.
- (2) Connect all terminals and connectors.

**CAUTION:** For the MTU power supply unit, connect CNP66 to CNJ66A, and CNP66C to CNJ66B for 50 Hz input. Connect CNP66 to CNJ66B and CNP66C to CNJ66A for 60 Hz input.

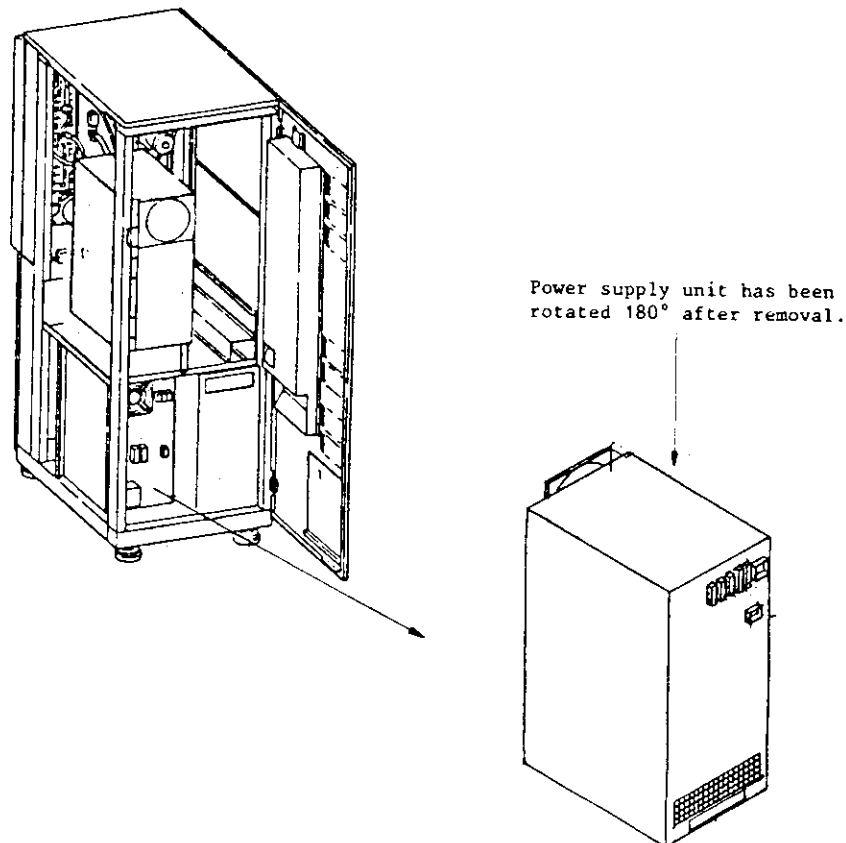


Figure L.50 MTU power supply unit

Some printed circuit assemblies in the MTU and FMT have short-circuit options for setting contents, such as tape drive serial number or density. If a PCA is replaced, check and set short circuits as described below.

#### EXPLANATION OF THE SHORTING PLUG/TERMINALS

The positions (Figure L.51) in which the shorting plugs are installed on the shorting terminals represent a binary code.

Short-terminal

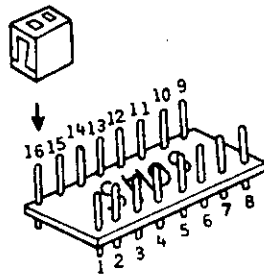


Figure L.51 Short-circuit location on PCA 1A06

Example: In Table L.4, below, when the shorting plug is installed between pins 3 and 4, a logical "1" is set. When the plug is installed between pins 2 and 3, a logical "0" is set. This sets the extended interface function.

Table L.4 MTU PCA 1A06, mounting position AG4

	Extended interface	File Search feature
Setting of '1'	3 - 4	6 - 7
Setting of '0'	(2 - 3)	(5 - 6)

Table L.5 summarizes the shorting plug settings for both the MTU and FMT.

Table L.5 MTU short plugs

PCA	Mounting position	Level '0' (not enable)	Level '1' (enable)	Setting (see notes)	Contents
1A02				(b)	
1A05	BG7	02 - 03	03 - 04	'0' (a)	Option 0
		05 - 06	06 - 07	'0' (a)	Option 1
		09 - 10	10 - 11	'1' (a)	Option 2
		12 - 13	13 - 14	'1' (a)	Option 3
1A06	AF4	02 - 03	03 - 04	'0' (a)	EC 3
		05 - 06	06 - 07	'0' (a)	EC 2
		09 - 10	10 - 11	'0' (a)	EC 1
		12 - 13	13 - 14	'0' (a)	EC 0
	AG4	02 - 03	03 - 04	'1' (b)	Extended interface File search by tape drive Tape drive serial number
		05 - 06	06 - 07	'0' (b)	
		09 - 10	10 - 11	'0' (a)	
		12 - 13	13 - 14	(a)	
	AG5	02 - 03 05 - 06	03 - 04 06 - 07	(a)	Tape drive serial number
	AG6	09 - 10	10 - 11	(a)	Tape drive serial number
	AG7	12 - 13	13 - 14	(a)	Tape drive serial number
	AJ6	02 - 03	03 - 04	'1' (a)	Density-select panel Threshold gain step for switching read slice level Streaming function Dual density tape unit
		05 - 06 (Step C)	06 - 07 (Step A)	'0' (a)	
		09 - 10	10 - 11	'0' (b)	
		12 - 13	13 - 14	'1' (b)	
Read/ write PCA		S3 S4		(b) (b)	S3 = 200 ips S4 = 125 or 200 ips

- (a) Setting is determined by factory but can be changed.  
(b) Factory set. Do not change.

Table L.6 FMT shorting plugs

PCA	Mounting position	Level '0' (not enable)	Level '1' (enable)	Setting (see notes)	Contents
1A04	AQ7			(b)	
1A05	AF1 AF2 AF3 AG4 AF5 AF6 AF7			(b)	(See data sheet)
	AG7	02 - 03 05 - 06 09 - 10 12 - 13	03 - 04 06 - 07 10 - 11 13 - 14	'0' (a) '0' (a) '0' (a) '0' (a)	Retry ID Burst 20 - meter check Reserved Reserved
	AH7	02 - 03 05 - 06 09 - 10 12 - 13	03 - 04 06 - 07 10 - 11 13 - 14	'0' (a) '0' (a) '0' (a) '0' (a)	Reserved Reserved Reserved Reserved
1A07	AJ7	02 - 03 (c) 05 - 06 09 - 10 (c)	03 - 04 (d) 06 - 07 10 - 11 (d)	'0' (a) '0' (a) '0' (a)	CMDE is supported Reserved Address line 2 is supported

- (a) Setting is determined by factory but can be changed.  
(b) Factory set. Do not change.  
(c) Valid when '0'.  
(d) Invalid when '1'.



### Procedure 1: Setting the Serial Number

Read the serial number of the right lower side at the back of MTU, and convert the number to 13 bit binary code.

Example: If the serial number is 538 (or 0538), install shorting plugs on the shorting terminals at locations AG4, AG5, AG6, and AG7 as follows:

	AG4	AG6				AG5				AG7			
Setting of '1'	13-14	3-4	6-7	10-11	13-14	3-4	6-7	10-11	13-14	3-4	6-7	10-11	13-14
Setting of '0'	12-13	2-3	5-6	9-10	12-13	2-3	5-6	9-10	12-13	2-3	5-6	9-10	12-13

Set short plug across to produce

12-13	2-3	6-7	9-10	13-14	2-3	5-6	10-11	13-14	3-4	5-6	9-10	12-13
	0	1	0	1	0	0	1	1	1	0	0	0
	0	5			3				8			

### Procedure 2: Setting the Engineering Change Level

Convert the engineering change level to 4 bit binary code, and set SH09 (AF4) in the MTU as follows:

Correspondence of each bit and connected Pin No.

Setting of '1'	3-4	6-7	10-11	13-14
Setting of '0'	2-3	5-6	9-10	12-13

Connected pin No.

Note: If the engineering change level is not changed, the PCA setting is the same as that for the previous PCA.

Example: When the engineering change level is 05

Binary code	0	1	0	1
Setting				
Connected pin No.	2-3	6-7	9-10	13-14

Procedure 3: Setting the Function (AJ6) in the MTU

	Optional density	Gain step feature	Tri- or dual density
Setting of '1'	3 - 4	(6 - 7)	13 - 14
Setting of '0'	2 - 3	5 - 6	12 - 13

Note: Gain step ..... If the read slice level changes when the  
SAGC step is greater than C, set it to 0.  
Tri- or dual density .... Always 1. Do not change.